

**REVIEW: GOOGLE GOES PREMIUM
WITH THE CHROMEBOOK PIXEL**

DISTRO

030113 #80

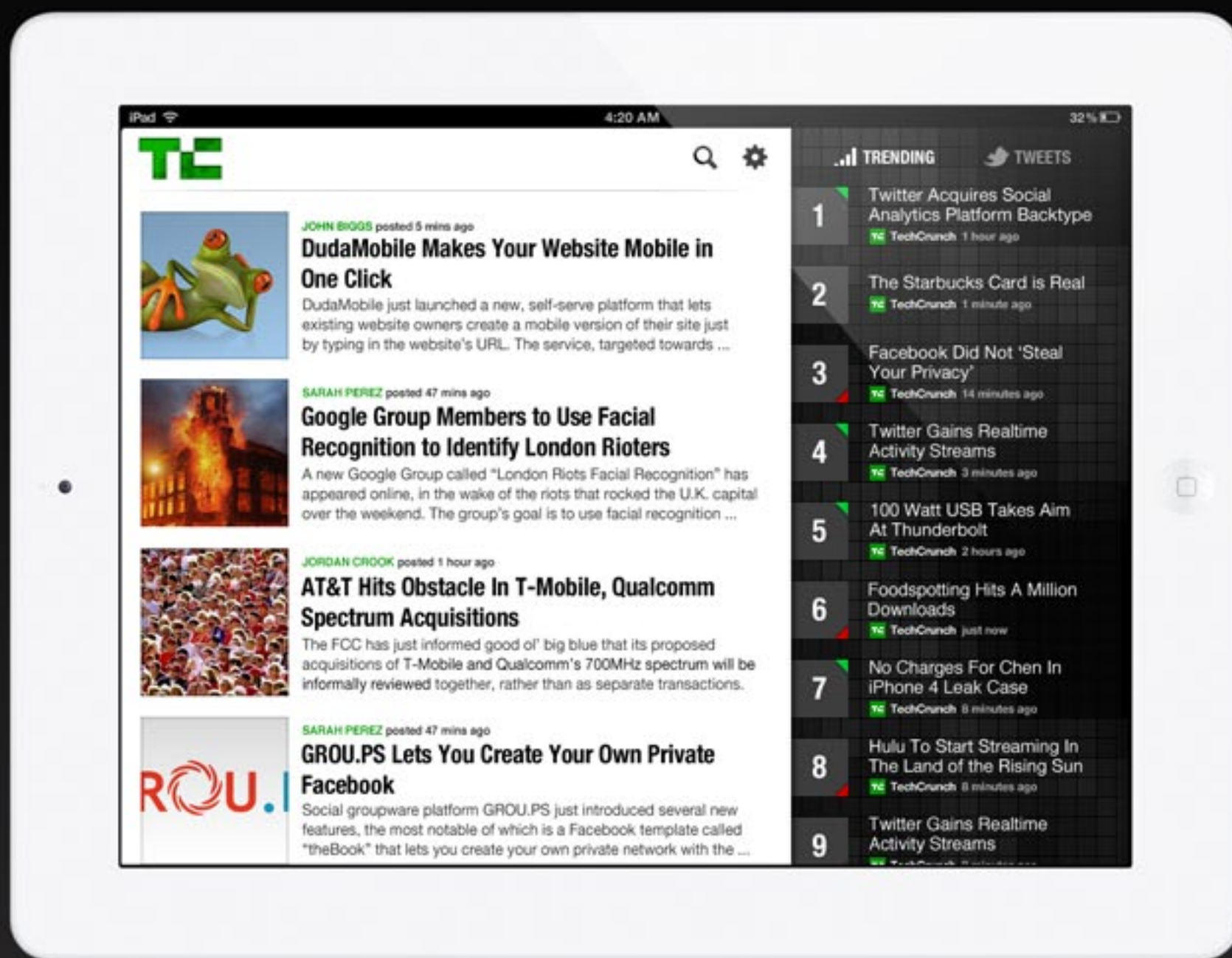
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ISSUE 80

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03.01.13

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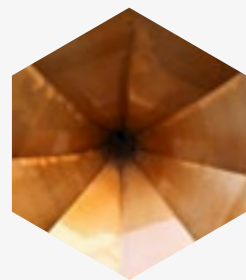
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TIME MACHINES

A Slab is Born

On the Cover:
Illustration by
Daniel Pelavin for Distro



SIR GALAXY THE FOURTH

DISTRO
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EDITOR'S
LETTER



AFTER WATCHING SOME of the life get sucked out of many of our favorite consumer electronics shows with major companies choosing to do their own thing in boutique events in fabulous cities around the world, we had our concerns about the 2013 iteration of Mobile World Congress. The HTC One got a showy New York City launch the week before the event and we already knew that Samsung was holding the Galaxy S IV until later. What's left to see in MWC, then? As it turns out, a heck of a lot.

I won't spend an awful lot of time running over the products launched at the show, because in this week's Distro we're giving you the run-down on the major ones, but I did want to highlight a few. The biggest of the bunch, and I genuinely don't mean to make a joke by saying that, is the Samsung Galaxy Note 8.0. Some say it's a response to the iPad mini, or that it's Samsung plugging the gap between the Galaxy Note II and the Galaxy Note 10.1. All we know is, it's

the biggest damned phone we've seen in a very long time.

Yes, it is a phone, or at least can be used as one, but those purchasing the thing aren't terribly likely to be using it as such — at least not frequently. I don't think we've reached a state of social phablet acceptance where holding an 8-inch device to your head is cool. But, given the minimal additional cost to include the earpiece into what was already a cellular-equipped device, I say



“Samsung rented out Radio City Music Hall, which we presume means that the company’s next great phone will have great legs.”

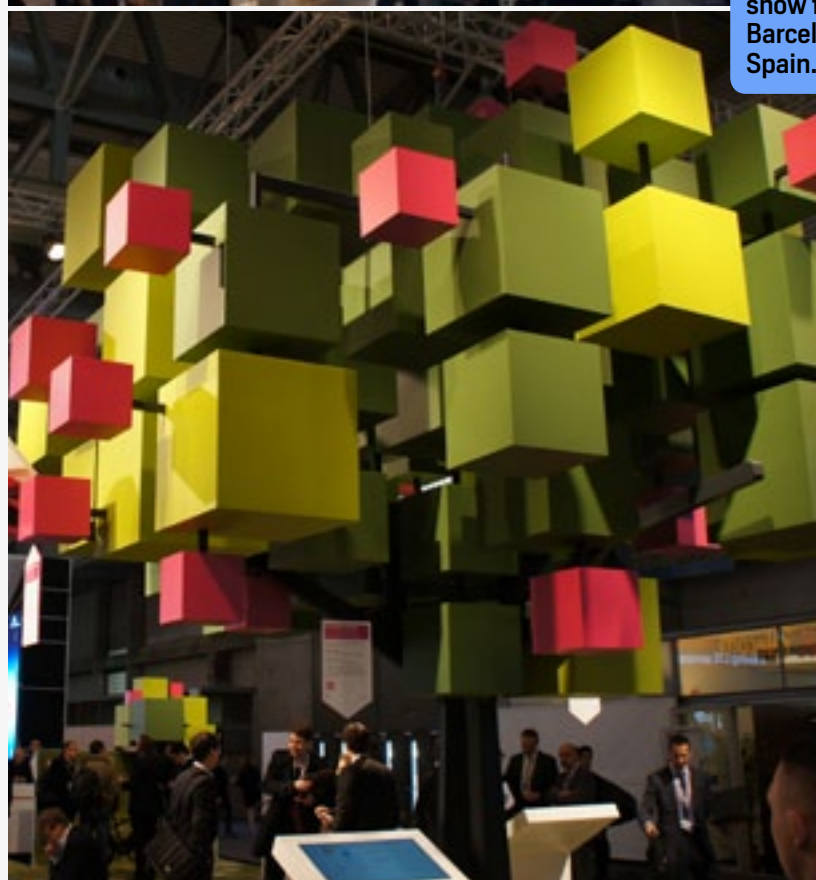
why not include it? No harm in providing the option.

Its primary use will certainly be tablet-like, with the typical stubby S Pen slotting in the back and allowing sketching on the 1,280 x 800 TFT LCD. Yes, an LCD, and a non-IPS one at that, which has me concerned about the ultimate display quality, but our brief hands-on with the thing left us reasonably impressed. No pricing or availability yet, but take a look at the pricing of the LTE-equipped iPad mini and you probably won’t be far off.

That device will be using Samsung’s Exynos processor, as per usual, but NVIDIA gave us a taste of what’s in store for future Tegra 4 devices. A delicious taste. We were able to benchmark a reference tablet running the chipset and it delivered scores that were, on average, between three and four times faster than modern Tegra 3 devices. That was helped somewhat by the use of SanDisk’s



A glimpse of MWC 2013's show floor in Barcelona, Spain.



iNAND Extreme flash storage, which offers 45 MB/s reads and writes. Whether retail devices will also make the investment remains to be seen.

But enough about MWC stuff. Let’s talk about what comes next. Samsung confirmed what we’d heard over the past weeks and months, that it will launch the Galaxy S IV in New York City on March 14th. To give the full NYC experience, Samsung has rented out Radio City Music Hall, which we presume



“Finally, should you hit your sixth strike, your case will be forwarded on to the MPAA or RIAA.”

means that the company's next great phone will have great legs. Aside from crude Rockette-based jokes, we know very little about what the GS IV is purportedly packing, but hopes of a drastic shift away from the company's plastic-heavy designs were dimmed somewhat by the “more of the same” design featured on the Note 8.0. Of course, if Samsung were going to drastically change things up, the launch of what will almost surely be the most popular Android device of the next year would be a mighty good time to do it.

Finally, the Copyright Alert System got rolling this week, a sort of penalty card system for those believed to be downloading stuff illegally. If you're a subscriber on one of the participating ISPs (which includes Verizon, Time Warner Cable, AT&T and Comcast), your internet doings will be subjected to algorithmic perusal. Should you be suspected of shuttling bits illegally, you'll get a warning. Initial warnings will simply be emails or other messages. Later warnings will result in you being redirected to warning websites

before having your bandwidth throttled — a curious punishment that implies slowly downloading illegal things isn't as bad as doing it quickly. Finally, should you hit your sixth strike, your case will be forwarded on to the MPAA or RIAA. Things then have the potential to get rather more serious.

In this week's Distro we're focusing on the excitingly portable world of mobile devices. We have previews of the most important devices coming out of Mobile World Congress in Barcelona, a feature from Brad Molen breaking down what the new unlocking policy in the United States means for the legality of bootloaders and the third part of his 30-day quest with the BlackBerry Z10. Sharif Sakr talks about the ever-evolving shape of the smartphone, Darren Murph weighs in on the Note 8.0, Ross Rubin talks 4K in Switched On and Joshua Fruhlinger explains why it's OK to still like vinyl — as if you needed any further encouragement to go retro. All that plus a Q&A with modder extraordinaire Ben Heck. Whether you're on your first strike or your sixth, we hope you enjoy. 



TIM STEVENS
EDITOR-IN-CHIEF,
ENGADGET



MARKET OVERLAP, PROBLEM SOLVERS AND MISSING BB



Touch article names
to read full threads

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INBOX



THE RISE OF THE
EVER-EXPANDING
SMARTPHONE SCREEN
ISSUE 79,
FEBRUARY 22ND, 2013

“I hope things will settle down from now. I’d say 4.5-inch is great for a flagship smartphone and 5.5-inch is great for a phablet, such as the Galaxy Note. But I really hope all the flagships won’t just keep growing and growing. I wouldn’t mind having some more thickness if they need the space for a bigger battery.

“I honestly wonder what the demand for tablets will be like as phones get bigger and bigger.”

— AMIRAMI

Especially if more thickness also means a better camera.”

— GEORGIJE

“There is a huge demand for big screens on smartphones. Deal with it.”

— MARTINUS



**BACK TO BLACKBERRY:
30 DAYS WITH THE Z10
(PART ONE)
ISSUE 78,
FEBRUARY 15TH, 2013**

“The sideloading is something that 99 percent of users will never do.”

— **BASATNEELECTRONICS**

“I really like these long term real world tests rather than the reviews that appear immediately after launch. This feels more natural, like you are listening to a friend talk about his new phone, rather than an expert talking about specs.”

— **SYGYZY**

“The real test is when you move back to your old phone. If you miss anything from the BB, then we know it succeeded.”

— **GIYAD**

**BACK TO BLACKBERRY: 30
DAYS WITH THE Z10
(PART TWO)
ISSUE 79,
FEBRUARY 22ND, 2013**

“Huge battery tip for me that has made my Z10

“The best way to improve battery life is to use native apps and also to suspend apps instead of running them in the background.”

— **PDZ**

an easy all day / night warrior: turn off box / drop box login when you don't need it. Also turn off WiFi if you know you won't be connecting. These alone have doubled my battery life.”

— **NIGLBROWN**

“Your experiences with that battery life is my main point for a no-go... Remember, this is Engadget, so a lot of your readers use the internet and its accompanying services a lot more than normal, sane people do.”

— **LEMONGRAB**

**LENOVO
THINKPAD TABLET 2
ISSUE 79,
FEBRUARY 22ND, 2013**

“I feel like this device is

almost what I want, but not quite enough, which is how I feel about W8 devices in general. They're 80 percent there (and maybe this one is 85 percent), but not quite enough for me to pull the trigger.

The optical trackpad that replaces the nipple is quite cool though. I hope to see that as a regular feature on ThinkPads in general in the future.”

— **THEOILMAN191**

**SONY XPERIA Z
ISSUE 79,
FEBRUARY 22ND, 2013**

“I love [that] you dunked it in the water and it just kept going. ^-^

Shame about the battery life really.”

— **GOLDENRABBIT**



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EYES-ON

ION iCADE ACCESSORIES

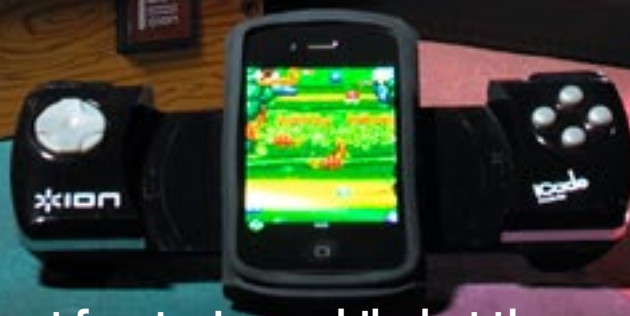


iCADE
ARCADE
CABINET



Tap for
detail

iCADE
CORE



iCADE
MOBILE

CLASSIC CONTROLS

Tablet and smartphone gaming is great for staying mobile, but the experiences are locked in to finger swipes and taps for eliminating bad guys or gobbling up ghosts. As an alternative, Ion offers a trio of Bluetooth-connecting add-ons that offer a more traditional feel to game controls, including two that will take you back to the arcade.

THE DAMAGE: \$80-\$100



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EYES-ON

ION iCADE ACCESSORIES



iCADE CORE

This scaled-down version of the Arcade Cabinet offers the same feel in terms of layout of the controls, but in a more mobile form factor that recalls the lap-friendly joysticks of the '80s and '90s.



PHOTOGRAPHS BY WILL LIPMAN



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EYES-ON

ION iCADE ACCESSORIES



iCADE MOBILE

An iPhone or iPod touch is cradled in the center by a rubber holster that can rotate to offer alternate angles for game tasks. The gadget sports a full arsenal of controls including a D-pad and shoulder buttons.



PHOTOGRAPHS BY WILL LIPMAN



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EYES-ON

ION iCADE ACCESSORIES



iCADE ARCADE CABINET

After an April Fools' joke, ThinkGeek teamed up with Ion to bring the compact Arcade Cabinet to market. Besides sporting the stylings of a full-sized unit, the device pairs with an iPad to control Atari's *Greatest Hits* titles.



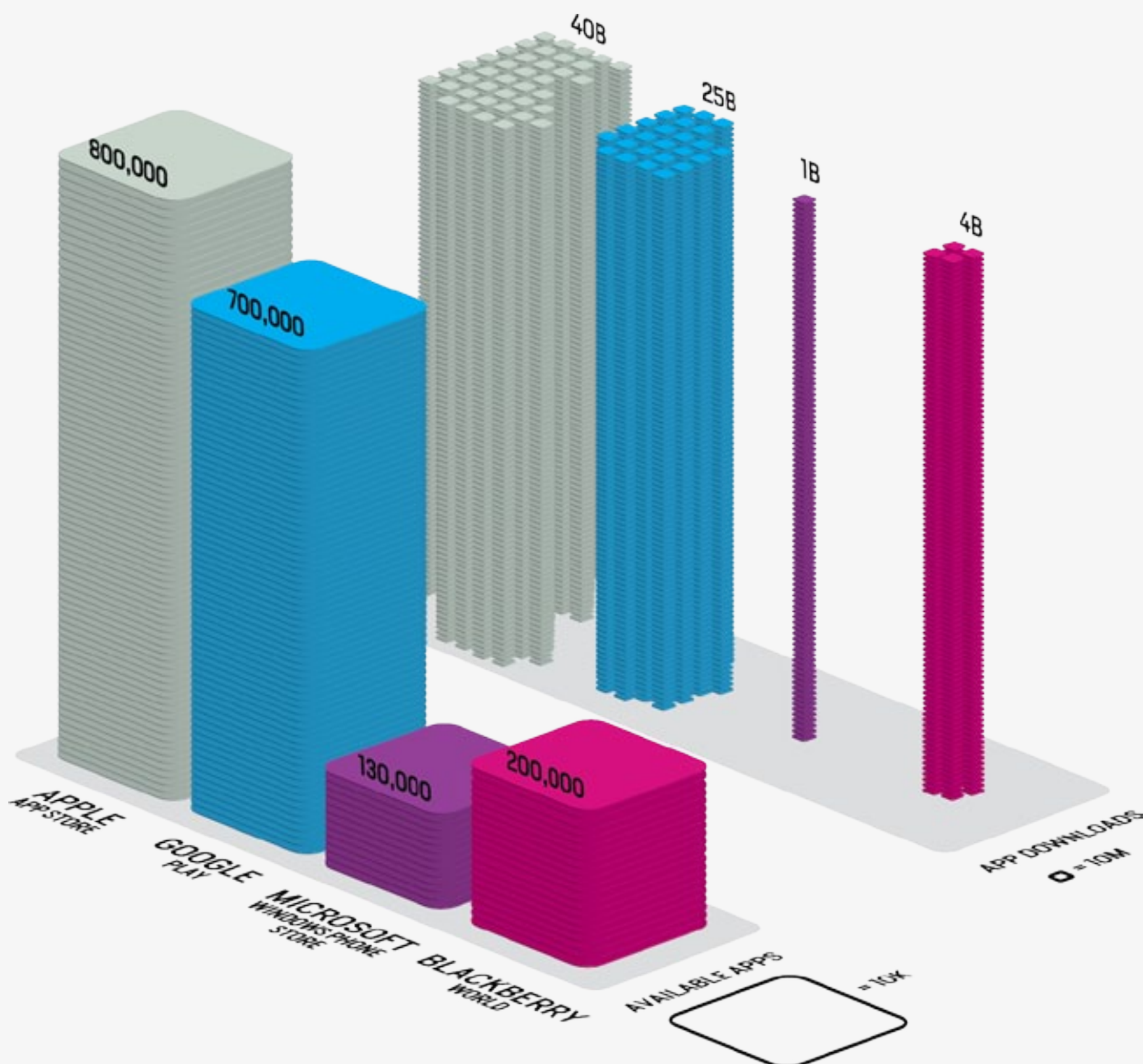
PHOTOGRAPHS BY WILL LIPMAN



Feeding the Mobile App-etite

There have been some changes in the mobile app world since we checked in last July. RIM's App World has morphed into BlackBerry World and, with the advent of BB10, they're now offering more than 200,000 apps, with downloads reaching 4 billion strong. The new Windows Phone

Store now has WP8 and touts 130,000 apps and a respectable 1 billion downloads at last count. Apple and Google are still the clear frontrunners, but the spoils go to the consumers, who now have a rich ecosystem of apps and OSes to choose from. — *Jon Turi*



SOURCE: APPLE/GOOGLE/MICROSOFT/BLACKBERRY





The Robot Will See You Now

By Jonathan Cohn
The Atlantic

IBM garnered yet more headlines for its Watson supercomputer in early February when it announced that Memorial Sloan-Kettering was using it as a tool to aid doctors in cancer treatment decisions. In this cover story for the most recent issue of *The Atlantic*, Jonathan Cohn takes an in-depth look at how that system will work, and also connects the dots to other new technologies that promise to radically change healthcare for patients and doctors alike. Not surprisingly, while there's plenty of promise, there is also much that has some concerned and many implications that are not yet known.

PHOTOGRAPH COURTESY OF IBM

The Incredible Rise and Fall of a Hacker Who Found the Secrets of the Next Xbox and PlayStation — And Maybe More
By Stephen Totilo

Kotaku

Chances are you've heard the name "SuperDaE" if you've been following video game rumors lately — with him being the source behind major leaks of both Sony's and Microsoft's next-gen consoles. Here, *Kotaku*'s Stephen Totilo looks at how he got that access, and how it ultimately attracted the interest of the police and FBI.

PlayStation 4: A Videogame Console
By Ian Bogost

The Atlantic

Speaking of next-generation devices, Ian Bogost looked at last month's launch / non-launch of Sony's new PlayStation 4 for *The Atlantic*, and asks what it means when a new game console — or any new technology, for that matter — is more ordinary than revolutionary. As Bogost suggests, that's not necessarily a bad thing — it could be a welcome change.

Dwarf Fortress: Ten Hours with the Most Inscrutable Video Game of All Time

By Casey Johnston

Ars Technica

From next-gen games to something completely different: *Ars Technica*'s Casey Johnston looks at the cult-classic *Dwarf Fortress*, a game released in 2002 that looks like it came from decades earlier. The piece may or may not make you want to rush out and play it, but there's a good chance you'll want to at least learn more about it. [The *NYT* piece linked near the start of the *Ars* article is also worth a read.]



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stories



THE GALAXY NOTE 8.0 BRAND PLAY



DISTRO
03.01.13

FORUM

EDITORIAL

BY DARREN MURPH

Even as the doors to this year's Mobile World Congress had just barely opened, you might say the show was already won. And, perhaps unsurprisingly, it was Samsung doing the winning. For those who were far too busy enjoying their Saturday evenings to notice, I should point out that Samsung has just recently taken the wraps off of the world's largest smartphone. The global version of the Galaxy Note 8.0's fantastically (hilariously?) large display is indeed embedded onto a device that will not only surf the soothing waters of the world wide web, but also make phone calls for those brazen enough to toss it upside their noggins.

The question, obviously, is "*Why?*" But as I let the announcement wash over me, the answer became all too clear: "*Because it can.*"

You see, Samsung is no longer beholden to some of the same resource restrictions that, say, HTC is. Outside of Apple, it's essentially the only major manufacturer in the smartphone universe that's pulling in meaningful profits. The marketing budget alone of this company outclasses the R&D

budget of some of its (very formidable) opponents. Tangible reports suggest an astonishing \$12 *billion* per year — "more than Apple, Microsoft, HP, Dell and Coca-Cola combined." The Galaxy Note 8.0 wasn't built because Samsung expects the world to soon eschew 4.7-inch displays for even larger ones; it was built because it's *absurd*. Because it's *audacious*. Because it's *unique*. And in doing so, it has created one of only a smattering of devices that even the casual observer of technology will remark on as they waltz into work on Monday morning.

A longtime sports radio personality (Colin Cowherd, if you're curious) once said the following: "You either have to be good, or you have to be interesting — but not necessarily both at the same time."

**Samsung built the
Note 8.0 for the
same core reason
that Google built the
incongruously priced
Chromebook Pixel.**



No matter which way you look at it, this illogicality is at least one of the two.


It wasn't that long ago — June of 2010, as I recall it — that I was holding a similarly preposterous thing alongside my cranium. That was the ITG xp-Phone (casually running Windows XP Embedded, no less), which at the time I called “outrageous” because of its size without receiving any questions whatsoever about my sanity. It lived in a world where the 5-inch Dell Streak was being routinely chatted about for pushing the very definition of what kind of form factor a smartphone could occupy. In that era, these hulks were too thick, too exhausting and too uncouth to grab any real market share, despite garnering plenty of brand recognition for the outfits that were willing to give it a whirl.

Which brings us to where we are today. Pundits would probably go so far as to say that this isn't an ongoing race involving the iPhone and Android, but a race involving Apple and Samsung.

“You either have to be good, or you have to be interesting — but not necessarily both at the same time.”

Even the most lauded of Android handsets seem to be almost instantly overlooked by the mainstream public, regardless of how much praise is heaped upon them by the adoring tech media. In a world where it's almost comically easy for technology consumers to truly educate themselves about available devices in an unfiltered manner, Samsung's skyrocketing growth in the industry proves that overbearing advertisements still work. Brand recognition is still vital. And, most importantly, if you see / hear something long enough ... you start to believe it as fact.

I'm not saying that the Note 8.0 won't be a stellar smartphone. I'm also not promising you that it will be. But what I'm absolutely certain of is that Samsung didn't create this because it believes the majority of consumers are going to bring back sidetalking the way the “Harlem Shake” has been resurrected.

It built it for the same core reason that Google built the incongruously priced Chromebook Pixel: to suck the masses into the overarching brand, only to sell them on something smaller, cheaper and entirely more rational. Make no mistake about it — the Galaxy brand just got a lot stronger, regardless of whether or not a single soul dares to make a call in public on the Note 8.0. 

Darren holds the Guinness World Record for being the most prolific professional blogger on planet Earth. He's also an argonaut.



A 4K IN THE ROAD

DISTRO
03.01.13

FORUM

SWITCHED
ON

BY ROSS RUBIN

THE PAST DECADE has now seen at least three industry-wide technologies vie for the future of television — HD, 3D and now 4K or UHD. The first of these — HD — represented a massive change for television that affected nearly every aspect of the TV experience from how it was captured to how it was consumed. A decade later, it is nearly impossible to purchase a TV that does not support high-definition. The second — 3D — was a mixed bag. While the technology became commonplace on high-end TVs, it has remained relevant for only a small fraction of programming. The question, then, is which of these paths, if either, 4K will follow.

HD, 3D and 4K have all sought to overcome high prices and a dearth of optimized content by counting on the “pull” of consumer demand. Indeed, once the HDTVs became more affordable, consumers flocked to them. However, two factors came into play beyond the increased

resolution. First, the government’s push to digital helped convince broadcasters to offer digital programming. As they made the transition, they added HD. Second, as TVs were transitioning to HD, they were also migrating to flat-panel technologies. Indeed, while many early HD buyers




“Where will 4K land? In the short term, as was the case for early HDTVs, the question is moot for most consumers until the price comes down.”

chose bulky rear-projection sets to save money, many of the early flat-panel TVs sold were less expensive “EDTVs”, 480p televisions. Many flat-panel buyers cared more about the slimness of the TV itself rather than HD programming.

However, consumers were happy to embrace both flat-panels and HD as soon as both became available together in an affordable product, and America’s TV landscape was forever changed. The industry moved on to smart TV and 3D as the one-two punch to get consumers to upgrade. However, most of the functionality of the former was relatively easy to add with an inexpensive device from the likes of Roku, Boxee, TiVo, Netgear or Apple. From the technical side, 3D was the stronger draw, but the reliance on glasses, mitigated somewhat by passive technology mostly supported by LG and Vizio, has stifled 3D content consumption. In addition, the percentage of 3D content remains limited and lopsided, heavy in mostly kid-targeted animation, and bleeding into horror, sci-fi, action films and sports.

Where will 4K land? In the short term, as was the case for early HDTVs, the question is moot for most consumers until the price comes down. Once that happens, there is some concern that sets may need to be too large for 4K to really make a discernible difference. However, the triumph of “full HD” that helped to catapult LCD televisions beyond plasma sets showed that, as long as the price delta is not too great, consumers can be sold on specs and future-proofing. In addition, while physical constraints might be an issue in some apartments or with some furniture, Americans have shown a willingness to embrace ever-larger displays on their TVs, just as they have on their smartphones.

Unlike 3D, 4K has no barriers to enjoying its full benefits every time you turn on the set, and a growing percentage of films that make sense for 4K should extend far beyond the corresponding number for 3D. Years down the road, virtually all high-end TVs will likely support 4K and the consumer electronics and content industries will figure out some way of delivering such content. However, TVs, more than any other mainstream consumer electronics product, remain furniture. While TVs have slimmed down even further from the initial flat-panel displays, there isn’t the dramatic physical shift from tube to LCD or plasma that accompanied the HD transition or a government push acting to accelerate sales. It looks like the correct path for this 4K in the road will be right down the middle. 



WHY WE GO RETRO

DISTRO
03.01.13

FORUM

THIS IS THE
MODEM WORLD



BY JOSHUA FRUHLINGER

SO I WAS LISTENING to Howard Stern on my way home from work the other night. Satellite radio came with my car and, whether you like him or not, Stern's a pretty good companion in LA traffic. I happen to like him. Anyway. ¶ "You know Gary," he prodded, "I'm gonna use a horse and buggy instead of a car, just because it's cool."

Turns out he was giving Producer Gary Dell'Abate a hard time about his love for vinyl. Gary did his best to defend the hobby, saying it has been scientifically proven that analog sounds better than digital, that it's just something people do for fun and that it's a really interesting subculture.

Of course, he didn't win.

But it got me thinking: Why is it that we — or at least some of us — the technologically adept have a love for analog?

I'm one of them. You know, the guy who threads flea markets on the weekends looking for rare vinyl, the guy who

imports diamond styli from Japan, the guy who won't shut up about how listening to records is so much better than MP3s or even FLACs. You either love me or hate me for this. You want to talk about your '70s Thorens that you found on eBay or you want me to just shut up and hit shuffle.

Either way, you can't deny that hifi turntables as a home-listening alternative to digital files have taken off in recent years. According to Nielsen SoundScan, people bought 4.6 million records in 2012, a jump of 17 percent, and that doesn't even account for the likely millions sold to enthusiasts at flea mar-



“Analog is good.
But it’s not better.
Here’s to hoping
that we never let
it go. Choice
is a good thing,
don’t you think?”

kets and in dusty, old record stores. In short, people are dusting off their childhood records, seeking out the classics and enjoying music the way it was once meant to be enjoyed: actively.

Listening to records as opposed to listening to music files is a lot like the difference between going to the movie theater and leaving the TV on in the background. Sure, you might seek out a song or album and pay attention, but nothing comes close to the act of taking a record out of its sleeve, checking for scratches, giving it a gentle brushing, gently dropping the needle and waiting for those first fat analog notes. You sit nearby, excusing the crackles and dust noise, listen track by track, waiting to flip the record for the last 20 minutes.

You listen to the songs in their intended order. You read the liner notes in glorious widescreen cardboard format.

It’s good stuff.

There’s nothing wrong with lis-


tening to digital music. I do it all the time, probably 90 percent of the time, in fact. Sometimes I just want to hear the music, and nothing beats simply finding the song and firing it up. The alternative involves a record-spine hunt and finding the track on the surface of the vinyl. What’s more, I can bring digital music with me on the road, to the gym and to work.

It’s also good stuff.

I look at books and e-books in almost the same way. For those books that I want to really enjoy, to smell the print or gawk at the cover art for the first edition, I’ll read a real book. On the other hand, if I just want to check out a novel, take it with me on the road and save some space, I’ll grab the digital version.

The difference, though, is that books don’t read any better in their analog forms — you’re reading the same story at the end of the day. Perhaps the author did some interesting things with layout like Vonnegut did so well, but for most cases, you’re going to walk away having read a book. For the nostalgia and physical-object pleasure, though, reading a real book is a lot like pulling out a real record.

Analog is good. But it’s not better. Here’s to hoping we never let it go. Choice is a good thing, don’t you think?

And Howard, if you’re reading, I’m not about to take a horse and buggy home from work. After all, I wouldn’t be able to listen to you, would I? 



GOOGLE CHROMEBOOK PIXEL



The Chromebook Pixel
aims for the upper-
economic echelon
with beefed-up
build quality and a
high-res display
By Tim Stevens

We've had a bit of a love / hate relationship with the Google Chromebook since the first one crossed our laps back in 2011 — the Samsung Series 5. We loved the concept, but hated the very limited functionality provided by your \$500 investment. Since then, the series of barebones laptops has progressed, and so too has the barebones OS they run, leading to our current favorite of the bunch: the 2012 Samsung Chromebook.

In that laptop's review, we concluded that "\$249 seems like an appropriate price for this sort of device." So, then, imagine our chagrin



when Google unveiled a very *similar* sort of device, but one that comes with a premium. A very hefty premium. It's a high-end, halo sort of product with incredible build quality, an incredible screen and an incredible price. Is a Chromebook that starts at more than five times the cost of its strongest competition even worth considering? Let's do the math.

HARDWARE

Wow. This is certainly a departure. If you're going to charge an obscene premium for a laptop with an incredibly limited OS, you'd

The 16mm-thick Pixel atop the 19mm MacBook Pro.

If you'll forgive us just one cliché, Google has gone from zero to hero with the Pixel. It's truly something to behold.

better produce something that is incredibly well-made. In that regard, the Chromebook Pixel is a complete success. If you'll forgive us just one cliché, Google has gone from zero to hero with the Pixel. It's truly something to behold.



First impressions are of a laptop with surprising density. Apple's MacBook Pros, with their precisely hewn aluminum exteriors, have long been the benchmark against which other laptops were held in when it comes to a sense of solidity. In its first attempt, Google has managed to match that feeling of innate integrity with the Pixel, and in some ways go beyond it.

It's all machined aluminum, anodized in a dark, almost gunmetal color that successfully bridges the gap between sophisticated and cool. Everything is very angular; vertical sides terminate abruptly at the horizontal plane that makes up the typing surface. In fact, the only thing not bridged by right angles is the cylindrical hinge running nearly the entire width of the machine, but thankfully the edges of the entire laptop are just rounded enough to keep it from digging into your wrists un-

The torsional rigidity is impressive for a machine that is as thin, and as light, as this.



The squared edges have just enough bevel for a bit of comfort.

comfortably. Battle scars received while typing have become a bit of an annoyance in many modern, aluminum-bodied machines.

A good, quick test of a laptop's rigidity is to open it up, grab it on both sides of the keyboard and try to twist. On a flimsy product you'll hear some uncomfortable-sounding noises coming from beneath the keys and, if you're really unlucky, you might send a letter or two flying. Not so with the Pixel. The torsional rigidity is impressive for a machine that is as thin, and as light, as this.

To put some numbers on that, the laptop measures 16mm (0.62 inch) in thickness and 3.35 pounds (1.52kg) in heft. That compares very favorably to the 13-inch MacBook Pro with Retina, the one that we would most closely pit this against, which is 19mm (0.75 inch) thick and weighs 3.57 pounds (1.62kg). So it's thinner and lighter, and with a



very similar 12.85-inch, 2,560 x 1,700 display (which we'll thoroughly discuss momentarily), but with lower performance. It is, however, on par with the 13-inch MacBook Air when it comes to speed, and is only slightly thicker (0.06 inch) and heavier (0.39 pound).

A dual-core Intel 1.8GHz Core i5 chip is the one and only processor on offer here, paired with 4GB of DDR3 RAM and generally providing more than enough oomph to drive the very minimalist operating system, which is installed on either a 32 or 64GB SSD. The larger option is only available if you opt for the \$1,449 laptop, which also adds Verizon-compatible LTE to the mix (along with GPS). Either model sports dual-band MIMO 802.11a/b/g/n along with Bluetooth 3.0. For those who like to keep it physical, there are two USB ports on the left (sadly just 2.0) situated next to a Mini DisplayPort and a 3.5mm headphone jack. On the right is an SD card reader, along with the SIM card tray — assuming you paid for the WWAN upgrade.

For those who aren't interested in making use of that headphone jack, there are what Google calls "powerful speakers" built in here — though

Google has integrated an array of microphones throughout the machine to help with active noise cancellation.

they're hard to spot. They're integrated somewhere below the keyboard and, believe it or not, that "powerful" description is quite apt. You won't be giving your neighbors anything to complain about if these are cranked to maximum volume, nor do you need to concern yourself about cracking the masonry thanks to the bass, but the output here is respectably loud and good sounding. These speakers are at least

The charger has an LED indicator, but no magnetic connector.



on par with your average mid-range Bluetooth unit, meaning you'll have one less thing to pack.

For the receiving end, Google has also integrated an array of microphones throughout the machine to help with active noise cancellation, including one positioned to detect (and eliminate) keyboard clatter when you're typing whilst in a Hangout or the like. Without the ability to selectively disable this microphone we can't be sure how great an effect it had, but we can say that plenty of QWERTY-based noise got through in our test calls. Google, though, has indicated it will continue to refine the behavior of that mic, so there's hope for improvement.

Integrated in the bezel is a webcam situated in the center-top of the bezel, next to a small status LED to let you know when Big Brother is watching.

One final piece is the power plug, a largish wall wart that takes a cue from Apple by including a removable section. Here you can slot in either a flip-out, two-prong end or a longer, three-prong cable. The inspiration is obvious, but we're not complaining. This lets you have both a short, easy-to-pack version when you're traveling light and a longer but

clunkier version for those times when you need a bit more reach.

We do, however, wish Google had also taken inspiration from Apple and Microsoft and included some sort of magnetic power connector. We found that the small plug, with its traditional, single-prong-style connector, had a tendency to slowly work its way out of the laptop when the cable had any tension from the left. Thankfully, a bright glowing light on the connector lets you know when the laptop is charged or charging — and thus when the thing has slid out far enough to lose connection.

KEYBOARD AND TRACKPAD

Island-style keyboards continue to be all the rage and, for the most part, Google makes no exception for its latest Chromebook. The primary keys float in a slightly

The Pixel offers a top-notch keyboard and trackpad.



Typing on this machine is a joy.

recessed area, comfortably sized and comfortably spaced. Each has great feel and great resistance. Typing on this machine is a joy.

However, the row of function keys that rest atop the number keys, discrete buttons for adjusting volume and brightness and the like, is a different story. These are flush with each other and far stiffer than the normal keys. This isn't much of a bother, since you won't be using them nearly as frequently as the rest, but butting them right up against each other makes them difficult to find by touch. Thankfully, all are backlit, so locating them in the dark is no problem.

We also wished for dedicated Home and End keys, after finding the Chrome OS alternative of Ctrl + Alt + Up or Down to be a bit of a handful. Regardless, you'll quickly learn to type around these relatively minor shortcomings and enjoy the great keyboard. Thankfully, the trackpad is equally good.

It's a glass unit, darkly colored and positioned in the center of the wrist rest, which makes it slightly shifted to the right compared to the space bar. It has a matte coating but still feels quite smooth, resulting in a very nice swiping sensation indeed. Of course, with a 12.85-inch, touch-sensitive display, you may find yourself using it less frequently than you think.

DISPLAY

Again, up top is a 12.85-inch, 2,560 x 1,700 IPS LCD panel that we can't look at without thinking of the very similar 13.3-inch, 2,560 x 1,600 panel on the 13-inch MacBook Pro with Retina display. It's smaller but packs an extra 100 pixels vertically, giving it a slightly higher pixel density of 239 ppi. Naturally, that's far from the full story here, and those who are really into proportions will know that resolution equates to a 3:2 aspect ratio. In other words: it's rather tall.

A 16:9 aspect ratio (or something close to it) is the prevailing trend among non-Macs these days, but even when acknowledging that, this one feels particularly tall. Still, we didn't exactly mind it. As mentioned above, the keyboard is plenty roomy, and given that Chrome OS isn't *particularly* friendly to multi-window multi-tasking (manually justifying windows is a real chore) we were rarely left wanting a wider display.

That was, really, our only minor reservation about this panel. Otherwise we have nothing but love for the thing. It is, of course, a ridiculously high resolution, which makes pixels basically disappear. Indeed the simple, clean and stark Chrome OS looks great when rendered with such clarity, but we couldn't help but lament the occasional excess of white space that's becoming common across many of Google's web apps. For a





The Pixel's namesake screen is a sight to behold.

display with a pixel density this high, it feels somewhat under-utilized.

That is until, of course, you boot up the 4K sample footage Google thoughtfully pre-installed on the machine, which looks properly mind-blowing — even if it is only being rendered at slightly higher than half its native resolution.

This is a glossy panel, tucked behind a pane of Gorilla Glass, so glare may be a bit of a problem if your work setup has bright lights positioned behind you. Still, reflectivity seemed to be on par with the latest, optically bonded panels — that is to say, far from the “mirror, mirror” effect provided by many of the

earlier gloss displays. Contrast is quite good from all angles, though the color accuracy drops off if you look at it from too high or low, with everything quickly getting a bit pink. Slightly pretty.

And, finally, this is indeed a touch-enabled panel, something we didn't know we needed on a Chromebook — and frankly we're still not sure we do. We'll discuss that in more detail in the software section below.

PERFORMANCE AND BATTERY LIFE

Again we're dealing with a 1.8GHz Intel Core i5 processor here, a bit on the



It's no barnstormer, but the Chromebook Pixel runs a browser with aplomb.

mild side compared to most higher-end laptops. Still, it proves to be more than enough to run the lightweight Chrome OS. That's paired with 4GB of DDR3 RAM and, predictably, integrated graphics courtesy of Intel's HD 4000 chipset.

It's no barnstormer, but it runs a browser with aplomb. And, really, that's about all it's likely to do with the limited selection of apps available for Chrome. Everything we threw at it ran fine, though after extended sessions we did notice heavier websites started to get a little bit stuttery. It's nothing that rebooting the browser didn't fix.

High-def videos play smoothly, though when pushing the pixels (or running games), the machine does get fairly warm. The fan vents are below the hinge; a thin sliver of an opening that thankfully doesn't seem to dump a lot of hot air onto your lap. It's noticeable, but it isn't particularly loud or annoying and again, since you likely won't be doing too much taxing stuff here, don't expect to hear it all that often.

When it comes to battery life, Google estimates the 59Wh battery will provide "up to" five hours of continuous use. And, indeed it may. On our standard battery run-down test, which loops a video

at fixed brightness, the machine clocked in at four hours and eight minutes for the WiFi model. The LTE model, with its LTE antenna on, came in about 30 minutes shorter at 3:34.

These numbers are rather poor, unfortunately. The 13-inch MacBook Pro with Retina clocks in at more than six hours on the same battery test, while both the 13-inch MacBook Air and the latest Samsung Chromebook score about 30 minutes more even than that.

CONNECTIVITY

As mentioned above, both Chromebook Pixel models include dual-band MIMO 802.11a/b/g/n, which means you'll be sucking down bits at an optimal rate more or less regardless of what sort of router you're connecting to.

Stepping up to the \$1,449 LTE version of course means you can walk away from those routers. That machine includes a Qualcomm MDM9600 chipset to receive on LTE band 13, intended for Verizon in the US only. So, then, we tested it in the US in two different LTE markets on both coasts. Speeds varied widely from location to location, but in general matched or exceeded the speeds we saw from other Verizon-compatible mobile devices.

In terms of more practical connectivity concerns, it's worth noting that the modem takes about 30 seconds to reconnect after the laptop resumes from its suspended state, which is a bit annoying but certainly no slower





USB adapters will work, but there's no Ethernet port to be found.

than your average LTE USB modem. Also, Verizon is kindly including 100MB of data each month for free for your first two years of Chromebook ownership, but after that you'll be stuck paying up for one of Verizon's tiered data plans.

Oh, and the Pixel lacks an Ethernet port, and does not include an adapter. We tried a few standard USB Ethernet adapters and all worked without a hitch.

SOFTWARE

As we concluded in our review of the most recent version, Chrome OS has come a long, long way since that first Chromebook crossed our laps. What we have now is a far more sophisticated and

comprehensive experience than we had a few years ago, but it's still incredibly limited compared to the broader world of desktop operating systems.

Simple tasks like file management can be a real chore if you're doing anything other than moving a file into a subdirectory. And while the OS itself has a refreshingly simple visual style, it's also very stark and, frankly, a somewhat wasteful design. Not to keep harping on the file explorer, but each file in a list is separated by a sea of white big enough to basically double the effective height. When you're skimming through a big 'ol list of files in a directory, it takes a lot more scrolling than should be necessary given the resolution of this display.



It's disappointing that Google didn't introduce any gestures to the OS to match its newfound touch compatibilities.

At least Google made the scrolling easy. As mentioned above, the trackpad is quite good and very responsive. Multi-finger gestures are responsive, so good that you might not be inclined to reach up to that touch panel. But, you should, because the experience is generally good as well, though you'll rarely be doing anything more than scrolling webpages or documents. There's not really a whole lot more Chrome OS can do, but even in games like *Cut the Rope* and *Angry Birds*, touch was just as good as ... well, as it is on an Android tablet.

That said, it's disappointing that Google didn't introduce any gestures to the OS to match its newfound touch compatibilities. In fact, you can't even pinch-zoom in the image viewer or even on most pages in the Chrome browser — only in specifically pinch-friendly web-

sites (like Google Maps). There are no three- or four-finger gestures for switching apps, and swiping in from the bezels does nothing. Except, that is, for a swipe up from the bottom, which alternatively shows or hides the launcher bar.

Again, we won't restate the entire review of Chrome OS, but it's important to note at least briefly that functionality here is still very minimal. There are built-in apps for viewing photos and videos, for browsing files, for taking photos from the integrated webcam, an app for taking notes and ... the web browser. That, of course, is the most important part. Suffice to say, if you can't do all your work from inside of an instance of Chrome on some other platform (like Windows or Mac), you probably won't be able to do it here, either.

Still, we did want to point out one important part of the software, and that is it's easily

The function keys are jammed in tightly along the top.



replaceable. The bootloader is not locked and we've already seen the thing rocking Linux — and looking quite good while doing it. So, if you happen to be looking for an incredibly well-designed laptop to run that most noble of open-source operating systems, this could be it.

PRICING AND COMPETITION

We can keep the pricing bit short, because there are only two options here. For \$1,299, you can get yourself the WiFi model with 32GB of local SSD storage. For \$1,449 you step up to the LTE model, which throws in 64GB of storage in a bid to sweeten the deal.

Should that still be too bitter for your tastes — and we're thinking there's a very good chance it will be — Google has in-

cluded plenty of other incentives that are at least mildly saccharine. First among these are 12 free Gogo passes for in-flight connectivity, each one worth about \$14 for a total of \$168. The other, rather more compelling add-in, is 1TB of online storage free for three years.

That, believe it or not, is worth a whopping \$1,800, which of course means that if you were looking to rent that much data for a period of three years you'd actually be better off just buying a Pixel. It would, effectively, just be a nice, free toy.

For everyone *not* interested in storing copious quantities of stuff in the cloud, both price points are rather dear to put it mildly. As ever, it's difficult to compare a Chromebook

Comparing
build quality
of the Pixel
and the
MacBook Pro.



to other laptops on the market thanks to the limited functionality provided by the OS. So, we'll focus primarily on hardware comparisons, and as we mentioned above, we find ourselves inclined to compare this to the 13-inch MacBook Pro with Retina display.

That machine, with a full operating system and a faster, 2.5GHz Core i5 processor, starts at \$1,499. That, though, has a 128GB of SSD, twice that of the biggest Pixel. We could also see many comparing this against the 13-inch MacBook Air, which offers the same CPU, integrated graphics and 4GB of RAM for the same \$1,199. It's lacking the high-res screen but it perhaps makes up for that with,

again, 128GB of storage.

On the PC side of things, that resolution is unmatched, but the other specs certainly aren't. We recently had reasonably good feelings about Samsung's Series 5 UltraTouch, a 13-incher packing a similar Core i5 CPU, 4GB of RAM, but again a 500GB platter-based hard disk. An SSD isn't an option, but the \$849 price is certainly more palatable.

Again, none of these is an apples-to-apples comparison, as the Pixel offers a touchscreen, something all the Macs lack, and offers LTE connectivity, thus making it even more of a rare bird on the laptop scene. Whether these unique attributes,

The only rounded feature on the Pixel is the hinge.



plus the various goodies Google is throwing in, turn this into a compelling proposition compared to the competition is something you'll have to decide for yourself.

WRAP-UP

Again we reach the dreaded wrap-up section on a Chromebook review. It's simply never easy to classify these machines. In some regards, the Pixel is even harder to pigeonhole than its predecessors. The level of quality and attention to detail here is quite remarkable for what is, we'll again remind you, Google's first swing at building a laptop. Boot-ups are quick, performance is generally good and, of course, there's that display.

But, with one single statistic, Google has made the Chromebook Pixel even easier to write off than any of its quirky predecessors: price. For an MSRP that

is on par with some of the best laptops in the world, the Pixel doesn't provide anywhere near as much potential when it comes to functionality. It embraces a world where everyone is always connected and everything is done on the web — a world that few people currently live in.

The Chromebook Pixel, then, is a lot like the Nexus Q: it's a piece of gorgeous hardware providing limited functionality at a price that eclipses the (often more powerful) competition. It's a lovely thing that everyone should try to experience but, sadly, few should seriously consider buying. **D**

James Trew, Nicole Lee and Sean Buckley contributed to this review.

Tim Stevens is Editor-in-chief at Engadget, a lifelong gamer, a wanna-be racer, and a born Vermonter.

BOTTOMLINE

GOOGLE CHROMEBOOK PIXEL

\$1,299+



PROS

- Beautiful, high-res display
- Incredible build quality
- Great keyboard and trackpad

CONS

- Limited OS functionality
- Poor battery life
- High cost

BOTTOMLINE

Google's Pixel is far and away the nicest Chromebook on the market and rivals the best for build quality, but it's far too expensive for a machine with such limited functionality.



Nokia's Morph
concept plays
with the form
factor potential
of graphene.



PHOTOGRAPH COURTESY OF GRAPHENE-FLAGSHIP.EU

The Brutal, Exaggerated Death of the Form Factor Phone

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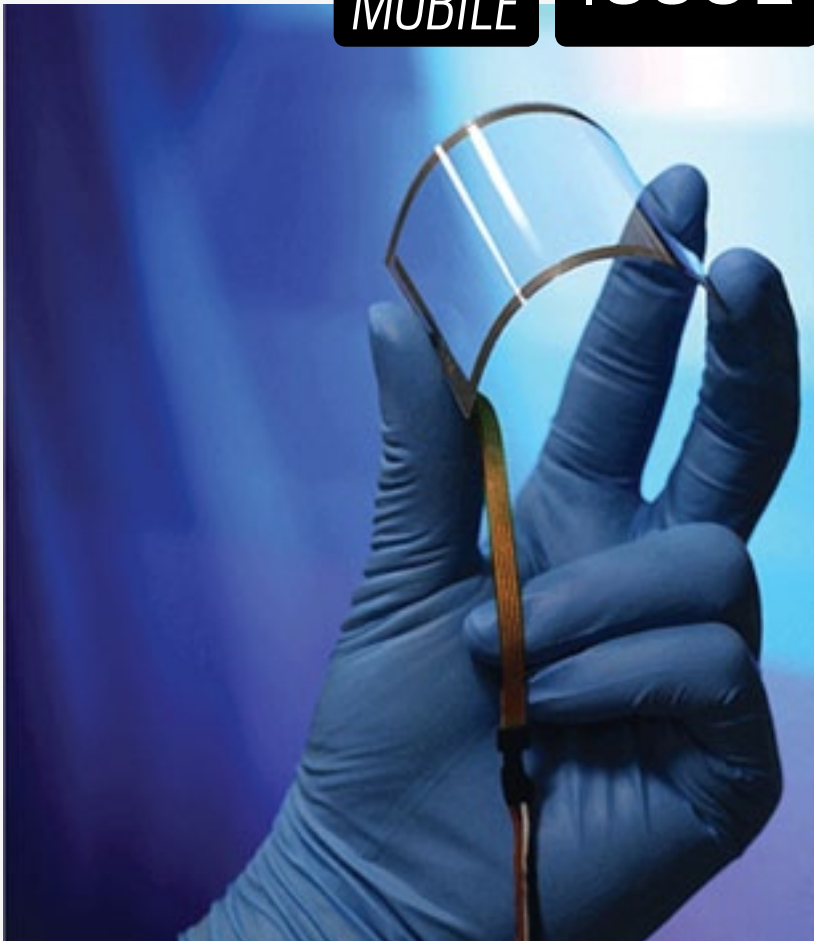
MOBILE

ISSUE

The SLAB-LIKE form factor has begun to dominate the mobile market, but there may be some innovation on the horizon
By Sharif Sakr

This year's Mobile World Congress was frenetic with phone news. That's why we braved Barcelona's rain, air-line strikes and pickpockets (no offense, dear BCN) in order to stay up to date. But if there's one aspect of mobile phones we *weren't* counting on to pro-





vide much excitement, it was their fundamental physical design or form factor. We're in the grip of the monolith, the concrete slab, the plain rectangle, with its full touchscreen and a couple of buttons here and there, and that grip is so tight that even the pickpockets are slightly shocked when they haul in something with a physical QWERTY.

But the point of this piece isn't merely to plot the decline of form factor diversity. It's actually to argue that the current monotony is probably only temporary, and that signs of a revival are already in the air. Read on and we'll do our utmost to convince you.

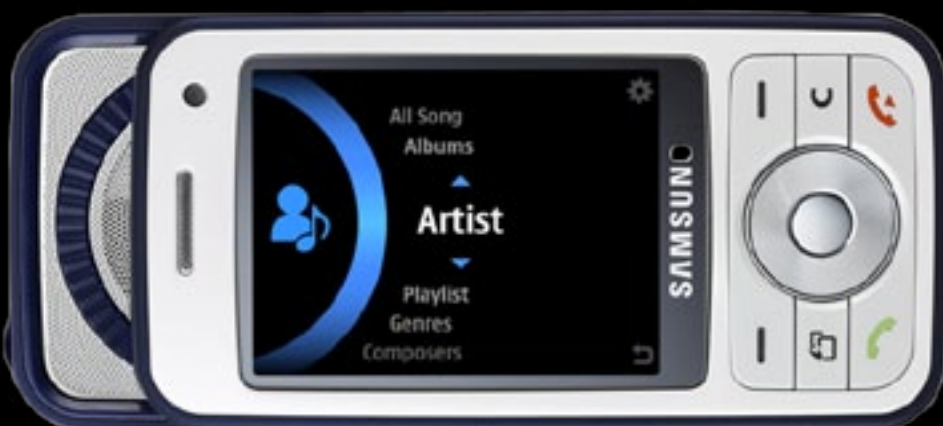
A BIT OF MWC HISTORY

First, let's take a look at how we arrived at this status quo of slab domination. Scanning over past MWCs, you don't have to go back very far to a time when things were different:

2008: *There was a whole rainforest of phone species, including sliders, clamshells, candy bars with styli and even phones with huge pull-out B&O speakers. The iPhone had just shaken the market with its capacitive touchscreen and orientation sensor, but many phone displays were still resistive and a pain to type on except with a stylus.*



2009: *The first-ever capacitive, touch-screen-only Android phone, the HTC Magic, arrived at MWC. But the continued success of QWERTY sliders like T-Mobile's G1 made the slab trend less than obvious.*



2010: By now, HTC had built the huge 4.3-inch HD2 (still kicking, by the way), and Dell's Streak and LG's GW990 both turned up in Barcelona following the same design language. The slab became the big slab, and hence ever more popular.



2011: Grizzled old men gathered round the fire to lament the death of consumer choice. Their whispers were occasionally interrupted by the calls of increasingly rare animals like the Xperia Play and HTC Surround.



2012: The grizzled old men died.

Which brings us to back to the here and now, and to the realization that slab domination has become global. We have some choice over size (mostly “big” or “bigger”), but not much else.

Ask our man Ittousai from Engadget Japanese and he'll tell you manufacturers in his nation refuse to experiment with exotic form factors for fear of losing sales overseas. Japan may have been a traditional reserve of 10-key candy bar phones like KDDI's Infobar C01 from last year, but NTT DoCoMo's headline launches have entirely been slabs since the (extremely weird) Fujitsu LOOX of 2011.

The Chinese smartphone market is dominated by the likes of Samsung, Lenovo and Coolpad, according to recent IDC fig-

ures, and those are all purveyors of the slab. The latest Nokia Asha phones targeting Asia and Africa are also mostly slabs — with the portrait QWERTY Asha 205 being one nice exception. BlackBerry still carries the torch, but even the Torch is now a slab, while the Curve — a staple in some emerging markets — is just plain old.

So, we've established that virtually the entire world basks in the shadow of the monolith. But is that necessarily such a bad thing? And is it necessarily permanent?

You could actually argue — and we're about to — that slabification has been a huge force for progress in the mobile world. And that it has driven technology forward to the point where new form factors have become almost inevitable.



FUNDAMENTAL SCIENCE

All the phones we've seen in the run-up to this year's MWC — notably the Xperia Z and HTC One — bear the scars of a very brutal process of natural selection. They're built for consumers who are no longer distracted by things like hinges or dual screens or "fret-style" keys, but who get straight to the raw credentials: UI, pixel density, battery life and performance. And when consumers are comparing products in such an organized manner, there are fewer gimmicks left for manufacturers to hide behind.

This harsh environment has forced the giants of this industry to spend billions of dollars on perfecting the fundamentals — like Google with Android, or like Apple and Samsung with their bespoke displays and processors. This is all investment in the underlying science of how to build a mobile device. It's not just progress that applies to traditional slabs — it can equally be deployed in totally new

*There are fewer
gimmicks
left for
manufacturers
to hide behind.*

form factors like Google Glass.

At the same time, smaller players have been forced to become more creative. They can pick up ready-made components from the big boys with minimal R&D, and spend their money on jumping to fill form factor niches. Easily one of the best examples of this we've seen recently has been the dual-screen YotaPhone from Russia.

The CEO of Yota Devices, Vlad Martynov, told us that he specifically wants to avoid competing with the giants "over specs and marginal improvements." The YotaPhone draws together components from suppliers like E Ink, Japan Display and Corning, who perfected their wares during the age of the slab but who can just as easily supply them to any new form factor that happens along.

Speaking of which, here are some more of our favorites:





PHYSICAL KEYBOARDS:

The BlackBerry Q10 will be an interesting one to watch when it eventually gets here. It's also worth noting that BlackBerry has a ton of recent keyboard-related patents under its belt and could even be planning a whole new type of flip phone.



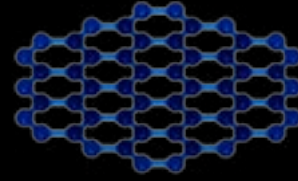
MODULAR DESIGNS:

Not just the PadFones of this world, but also smartphones that change when they're docked to a bigger screen and keyboard, such as the new, touch-based Ubuntu devices in 2014.



CAMERA PHONES:

The Samsung Galaxy Camera was a niche product, but it proved a point. Perhaps Nokia will try something similar with a new Lumia that brings back the chunky camera module of the 808 PureView?



FLEXIBLE PHONES:

Think Samsung's YOUM. Think Nokia's weird graphene stuff.



WEARABLES:

We've already mentioned Google Glass, but not the associated wacky patent for a keyboard projected onto limbs or clothing. Then there's also the popular Pebble watch, which Apple cannot have failed to notice.

WRAP-UP

We're at a crossroads. Either the slab will persist, like the technological equivalent of the crocodile, so perfectly adapted to its environment that it barely needs to change. Or things will go the opposite way: the technical expertise that has built up during the ultra-competitive era of the slab will lead to an explosion of new species. Not of clamshells or sliders, but of stuff that's *totally new* — and only made possible thanks to the latest breakthroughs in processor, battery and display technology.

We're not going to try to predict how things will go in the short term, because frankly we're too chicken. But it's fair to say this: the science that is evident in the latest smartphones, both in the hardware components and in the software, has evolved to the point where it's *too good* to be confined to any traditional form factor. **D**

Sharif is a British tech journalist with 10 years' experience filming and reporting news for the BBC and other broadcasters.



(Part Three)

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THE

MOBILE

ISSUE



BACK TO BLACKBERRY: 30 Days with the Z10

By Brad Molen



DROPPING A SMARTPHONE is an absolutely horrifying experience. And on my first day in Barcelona for Mobile World Congress, it happened to me with my BlackBerry Z10.

As much as I hate to admit, it was a dumb move on my part. Unfortunately, tragedy can strike with as simple an act as brushing one's elbow across the table, and that's all it took for me to knock my smartphone right onto a hard surface — facedown in a perfectly horizontal position (the worst imaginable angle). If you've ever been through such an accident, you know the few seconds it takes to pick up the phone and survey the damage can be incredibly nerve-racking and one of the most suspenseful moments of your life.

I'm happy to say that this particular story has a positive ending, as I turned the phone over to see if I would need to call BlackBerry HQ in a panic. To my shock, it was completely fine. There wasn't a single scratch or ding, and the touchscreen was just as responsive as ever. It would've been a different story had it fallen onto a concrete floor, but this still significantly increased my opinion

of the Z10's durability.

Had my Z10 come face to face with concrete, I would've been in a nasty predicament. Not only would I have had to pause or put the kibosh on my 30-day trial run with the BlackBerry Z10, but I'm also on the other side of the world in a foreign country. While getting a new phone isn't impossible, it's expensive, time-consuming and frustrating. Yep, this was how my 10-day international adventure began, but how well has it gone for me since?

I'm going to rewind the tale of my

The Z10's display survived its perilous, facedown fall without a scratch.



journey to where and when it all began: the flight here. In preparation for the eight-hour venture into the dark black skies, I loaded my phone up with podcasts (via a third-party native app) and plenty of games and music to keep me occupied. Everything worked up to expectations — and frankly, that shouldn't surprise anyone. Any smartphone that can't pass the basic airplane in-flight entertainment test simply doesn't deserve to exist, and the Z10 does just fine on that end.

One of the first matters of business after arriving was securing a pre-paid SIM for a few minutes, texts and all of my data

A full intercontinental flight's worth of Engadget podcasts was loaded onto the Z10 and it easily passed the in-flight entertainment test.

needs, since I landed at the airport with no way of communicating with the world without paying outrageous international roaming charges (I'm giving you the evil eye, US carriers; you know who you are). Though some BB10 services offer reasonable offline support, I had a difficult time finding any that applied to me. In fear that I wouldn't be able to get the address of my hotel or pull up a map on my phone at the airport, I made sure to take a few screenshots just to be on the safe side. Accessing the address in an email was easy enough, but the screenshots came in handy when trying to describe my destination to the taxi driver.

I promptly got set up with a Vodafone pre-paid SIM. After booting, it became



clear that my unlocked unit actually comes with a rather unique trait not seen in many other GSM devices (this is the first phone I've seen work this way): it's able to load up splash screens, ringtones, apps and accounts that are associated with the current SIM's carrier. On AT&T, my Z10 booted up with "Rethink Possible," contained AT&T-specific ringtones, offered AT&T Address Book as an account option and more. Once I inserted my Vodafone SIM, however, all of those disappeared and — with the exception of the ringtones — were replaced with Vodafone's versions (including a Vodafone app that magically appeared after my first boot up). This was a pretty cool discovery. It's a feature that I hope is implemented on all of BlackBerry's unlocked devices (all of our units have it), though I'm not expecting handsets that are originally locked to a carrier to have the same privilege. Sure,

With BB Maps not up to par for most navigational needs, Nokia Here's in-browser mapping tool was the go-to method of getting around.



I'm definitely not a fan of any sort of carrier branding — *especially* on unlocked handsets — but admittedly it was worthy of a small geekout moment.

Another service I've always geeked out about, despite how long it's been around, is Skype. I'm not the most frequent user of the service, but it's a godsend when I'm overseas because it makes it so easy to video chat with my wife and kids. While there are plenty of similar services available, it's the one that nearly every member of my family uses. I was hoping that Skype's anticipated app would be ready for BB10 by the time I left for Spain, but unfortunately it's still MIA. The only alternate option, FaceFlow, isn't cross-platform (though it offers a web interface), so I've been using the service on my computer instead. Of course, Skype is coming to the platform soon, so most BB10 buyers won't have the same concern for long, but it was one less way for me to take advantage of the OS.

A solid few days using the Z10 in

Spain haven't changed my mind about BlackBerry 10 — it's still a perfectly capable platform that just needs improvement in a few key areas — but I must admit that my experience abroad has been better than I originally expected. To be on the safe side, I brought along an unlocked Android device as a




backup, ready to accept my SIM at a moment's notice if I decided the Z10 wasn't successful at keeping up with my excessive work. Fortunately, I never felt it necessary to resort to the backup. Does that mean I had a flawless experience at MWC? Not at all. I had a few struggles, primarily in the area of mapping and app availability, and my desire for pure threaded-email conversations in the Hub dramatically increased when I was faced with twice the email volume and team email correspondence as a normal week.

Furthermore, my initial concerns with battery life were also magnified as I more heavily relied on the BlackBerry to handle a much larger workload than I usually require; indeed, I made good use of external battery packs as backups, just in case I ran out of juice halfway through the day. I typically got away with only needing one recharge per day. With that said, I want to make it clear that a firmware update is on the way which promises more efficient battery life, but I haven't had the opportunity to receive it yet while I've been on the road. I hope to get my hands on it as soon as possible to properly test it out.

One other thing I learned during my first few days at Mobile World Congress: four weeks after its initial launch, I was surprised to see a lot of interest in the Z10 when I pulled it out of my pocket. (The gestures seem to be a hit with most people, for what it's worth.) I know that part of this is due to the limited availability of the device so far, but people are still at least talking about it. This is good

news for the company in a few ways: it hasn't been entirely dismissed by the mobile community, BlackBerry hasn't been declared dead and it is at least seen with much more curiosity and intrigue than other phones introduced at the show. (Firefox OS, anyone?)

WRAP-UP

During the first half of my international adventure, I've learned that my Z10 is much more durable than I originally expected. The BB10 platform is also at least capable of handling the workload I throw at it, even in high-stress conditions. I can't say that it's been the most efficient method of tackling my trade-show routine, but I've survived so far. As I noted earlier, there have been a few frustrations along the way, but I got through nearly all of my typical chores just fine. (I think it's also important to mention that at this very moment in the platform's infancy, I couldn't pull this experiment off without sideloading Android apps.) A few days in Catalonia have not magically turned me into a BlackBerry convert, but the phones are good enough that I have at least become a lot more confident in the company's future. 

You can [follow Brad on Twitter](#), where he is documenting many of his thoughts and observations on BlackBerry 10.

Brad is a mobile editor at Engadget, an outdoorsy guy, and a lover of eccentric New Wave and electro. Singer and beatboxer.



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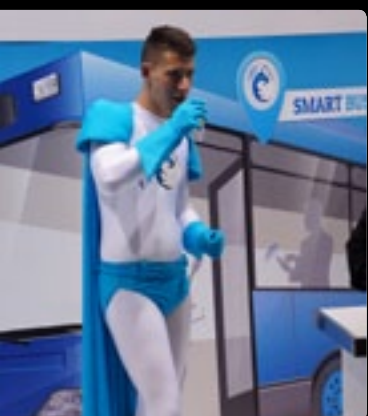
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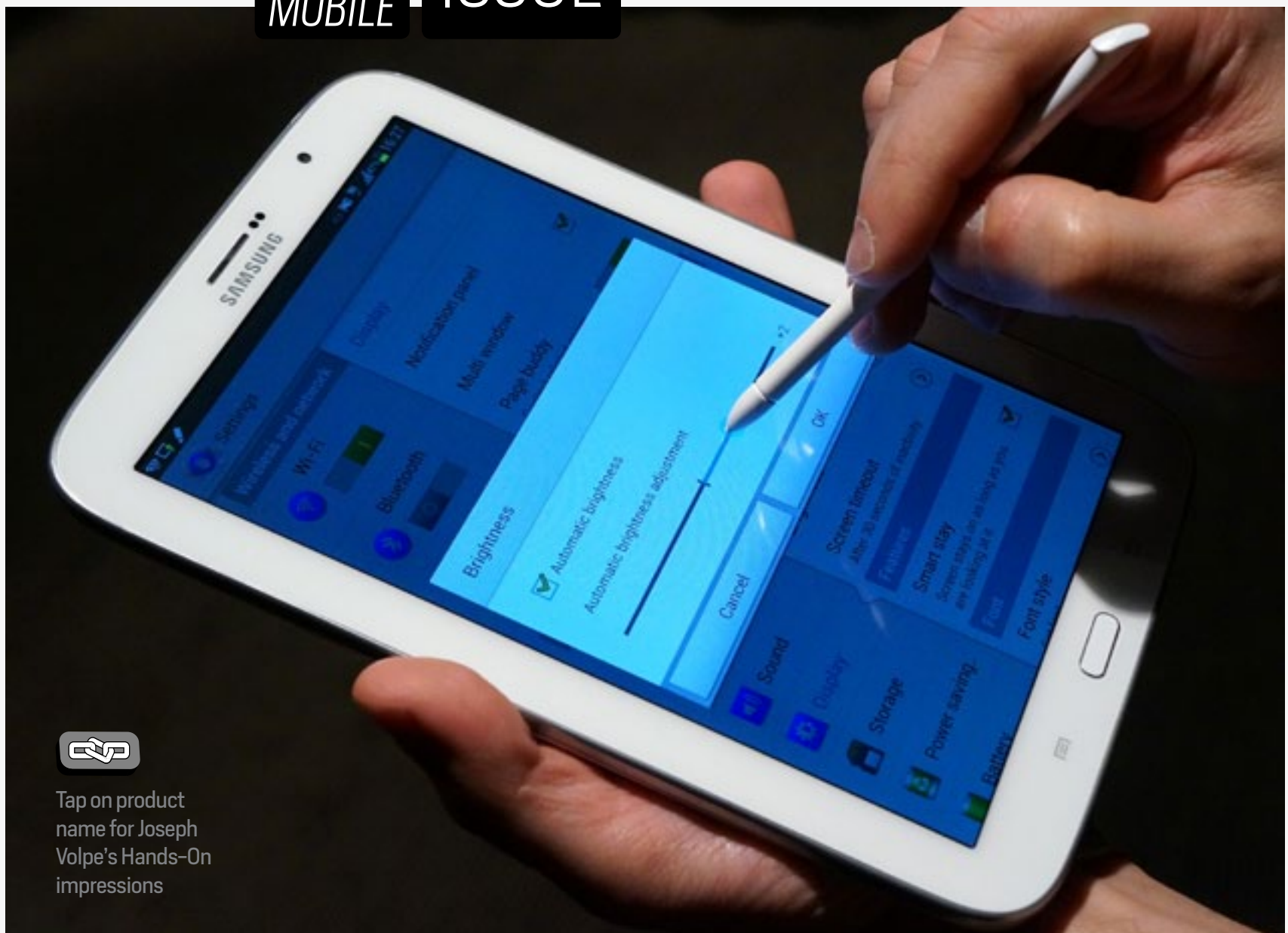


Hands-On: The Best of Mobile World Congress 2013



At the end of February, the tech world focuses its attention squarely on a week in Barcelona to see what the mobile players have in store for handsets, tablets and other devices





Tap on product
name for Joseph
Volpe's Hands-On
impressions

SAMSUNG GALAXY NOTE 8.0

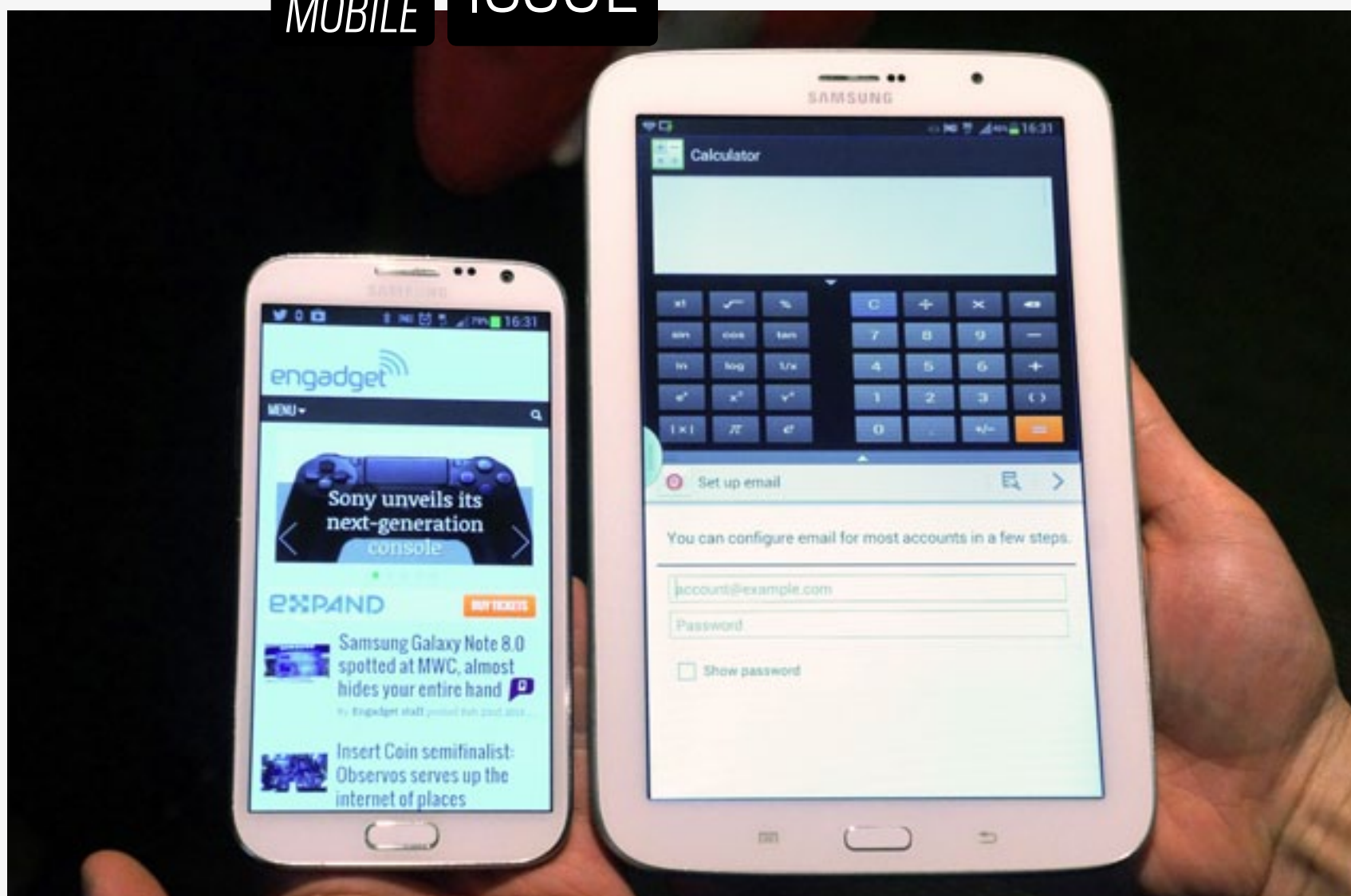
An updated, larger Galaxy Note from Samsung was inevitable. With this new Note, the company's culled the best of what's around its Galaxy into an 8-inch form factor, housing a TouchWiz-skinned Android Jelly Bean 4.1.2 OS and an S Pen as well as radios for HSPA+ and WiFi. But that extra inch alone isn't the Galaxy Note 8.0's main attraction. Samsung's wisely made use of the additional screen

real estate to bundle two extra features. The company's partnered with Peel for its Smart Remote app, a visual programming guide with remote control functions baked-in. And, in keeping with its portrait-oriented design, the Note 8.0 also incorporates what the

KEY SPECS

OS:	Android 4.1.2 Jelly Bean
CPU:	1.6GHz Exynos 4 Quad
MEMORY:	2GB
STORAGE:	16GB, 32GB / microSD up to 64GB
DISPLAY:	8-inch, WXGA 1,280 x 800 TFT, 189 ppi
CAMERAS:	5MP (rear) / 1.3MP (front-facing)
BATTERY:	4,600mAh





company calls “reading mode,” effectively optimizing the slate’s display for comfortable e-book use.

If you’ve spent any amount of time with the Note II, you’ll know what to expect from the Note 8.0 as its external design is incredibly similar. You get the same all-around plastic build, but where the Note 8.0 strays is one of its key improvements: users can now effect the capacitive menu and back buttons using the S Pen. With a 1.6GHz Exynos 4 Quad CPU and 2GB RAM under the hood, you’d expect the Note 8.0 to showcase nothing but brisk performance. Unfortunately, that didn’t appear to be the case as there were occasional moments where the tablet seemed to slightly hesitate before

executing actions — things like dual-window view for multitasking or simple app launches.

Yes, you will be able to hold it up to your head and make voice calls, however silly that may look. Of course, it’s more likely that prospective users will want to pair the tab with earbuds and thus reduce the risk of public humiliation. Samsung’s confirmed to us that, as of now, the US market will see a WiFi-only variant and its specs could change slightly, too. An LTE version is also on deck. Details on pricing and regional release dates are still being announced, but what we do know for certain is that there’ll be two storage configurations — 16GB and 32GB — for the global unit’s launch sometime this second quarter. — *Joseph Volpe*



LG OPTIMUS G PRO

The Pro version of last year's Optimus G comes in two flavors: Japan gets a 5-inch, 1080p phone, while Korea (and the US) is treated to a 5.5-inch phone at the same resolution, but with one of Qualcomm's latest mobile chips, the Snapdragon 600. We got to grip the Korean flavor at MWC and while we're still waiting on launch dates more specific than Q2, we couldn't help taking this particular G Pro for a spin.

Design-wise, the lines are softer, more curved and — if we're honest — more like the Galaxy S III. There's now a curved physical home button lodged beneath the screen, with capacitive back and menu buttons on either side of it that light up with the faintest glow. The back now gently curves into the rest of the phone, with that eye-catching "crystal reflection" effect now subtly shading into the sides. It retains



the same surprisingly light build quality of its predecessor, however, which makes us feel like a short fall could render this device a useless pile of glass shards and plastic pieces.

We've been aching to try out another phone with a next-generation Snapdragon processor, and the 1.7GHz quad-core beast didn't disappoint in our brief time with the device. Navigation and basic tasks were buttery smooth, even with LG's slightly gaudy 3D animations and Emotion UI. And the stock browser turned in a more-than-respectable 911.7ms on SunSpider, which is more than 300ms quicker than its predecessor at launch. The 400 ppi display is, not surprisingly, simply stunning. While it doesn't have the deep saturation and abyssal blacks of some panels out there, it's amazingly crisp and viewing angles are quite impressive.

— Mat Smith

KEY SPECS

OS: Android 4.1 Jelly Bean

CPU: 1.7GHz Quad-core Snapdragon 600

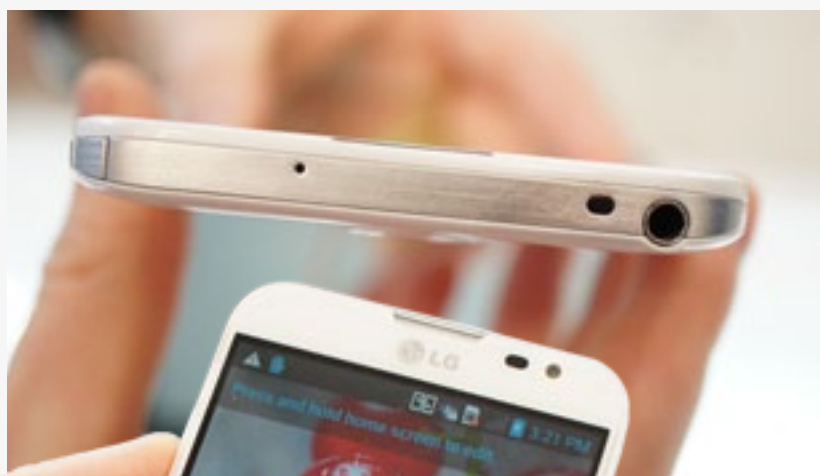
MEMORY: n/a

STORAGE: n/a

DISPLAY: 5-inch (Japan) / 5.5-inch (Korea), 1080p IPS, 400 ppi

CAMERAS: n/a

BATTERY: 3,000mAh (Japan) / 3,140mAh (Korea)





Tap on product name for Dana Wollman's Hands-On impressions

HP SLATE 7

Well, this might just be the biggest news to come out of Mobile World Congress. Long after discontinuing the TouchPad, HP is back with a new tablet. This time, though, it runs not webOS, but an old safety: Android. Interestingly, though, HP is returning to the tablet space not with a high-end flagship, but a lower-end device priced to sell. For a tablet priced at \$169, the Slate 7 feels decently well-made, and pleasant to hold. A stainless steel frame lends the whole thing some much-needed rigidity, while the matte, soft-touch finish on the back gives the fingers a comfortable resting place. It'll be sold in silver and red, though we're partial to the Beats Red. And yep, this

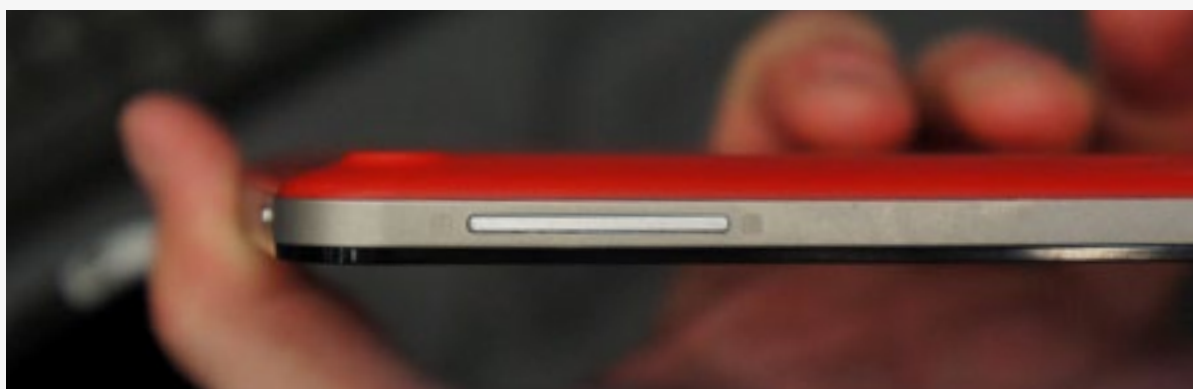
does have Beats in tow, like almost every HP laptop and Ultrabook already on the market. We think we like the Nexus 7 a little more — it feels more substantial, and the screen is sharper — but it's close.

Instead of an IPS panel, it makes use of FFS technology, which HP claims will create a good viewing experience in low-light conditions as well as harshly lit ones. All that said, the screen looks a tad washed-out. Finishing our tour around the device, you'll find a micro-USB port at the bottom for charging, along with those twin speakers. On the right side is your all-important volume rocker, while the top edge is home to a headphone

jack, power / lock button and a microSD slot — something the Nexus 7 is missing. The buttons are made of chrome and seem easy to press, so kudos to HP for using premium materials where it can. As for performance, Android lags slightly on that dual-core CPU, but we wouldn't say it's any worse than what you'll experience on other budget tablets. — Dana Wollman

KEY SPECS

OS:	Android 4.1 Jelly Bean
CPU:	1.6GHz Dual-core Cortex-A9
MEMORY:	n/a
STORAGE:	n/a
DISPLAY:	7-inch, HFFS
CAMERAS:	3MP (rear) / VGA (front-facing)
BATTERY:	n/a





Tap on product name for Joseph Volpe's Hands-On impressions

you'll not only notice it bend, but you'll also hear it creak. It doesn't augur well for the slate's durability, especially when you consider this is being positioned as a living room companion.

The Xperia Tablet Z's performance, on the other hand, offered up nothing but positives in the short time we spent with it. Thanks to a healthy amount

SONY XPERIA TABLET Z

Notice the family resemblance? For Sony's latest Android tablet take, its Xperia Tablet Z, the company's extending the austere, omnibalance design and waterproof certification of the Xperia Z to a 10.1-inch footprint and higher 1,920 x 1,200 resolution. Which means the unique, highly polarizing magazine-like fold of its predecessor, the Xperia Tablet S, has fallen by the wayside and, according to Sony, it's not likely to ever make a comeback.

Sony claims the Xperia Tablet Z is the world's thinnest and lightest tablet; a boast that carries weight when you first grip the tab. At 495 grams (17.5 ounces), the 6.9mm-thick tablet barely registers in your hands, at least when compared to heavier efforts that have come before it. So, that's the plus side to its construction, but there's a con hiding in its blend of polyamide, tempered glass and matte, graphite back: fragility. Exert some slight pressure on the Xperia Tablet Z and

of RAM (2GB), that S4 Pro and Jelly Bean build (4.1.2), the tab had no problem briskly swapping between the home screens and app drawer and even loaded up selected applications with a snap. Of course, we'll need to properly benchmark the tablet to get a real sense of its raw performance. For now, though, it appears this Z is more than competent. If you like the looks of Sony's sophomore Xperia tablet effort, you'll have to practice some patience — it's slated to ship globally sometime this May. When it does finally hit retail, you'll be able to grab the black model in both 16GB and 32GB configurations at \$499 and \$599, respectively. An all-white 32GB model will also be available, but only as a Sony store exclusive.

— Joseph Volpe

KEY SPECS

OS:	Android 4.1.2 Jelly Bean
CPU:	1.5GHz Quad-core Snapdragon S4 Pro
MEMORY:	2GB
STORAGE:	16GB, 32GB
DISPLAY:	1,920 x 1,200, 10.1-inch Reality Display with Mobile BRAVIA Engine 2
CAMERAS:	8.1MP (rear) / 2MP (front-facing)
BATTERY:	6,000mAh





Tap on product name for Mat Smith's Hands-On impressions



HUAWEI ASCEND P2

Just ahead of Huawei's press event, we were treated to an early viewing of its new 8.4mm-thick smartphone, the Ascend P2. With Android 4.1, a quad-core 1.5GHz processor, 13-megapixel camera and a 720p, 4.7-inch Gorilla Glass 2 Infinity Edge Display, it joins the likes of the Ascend Mate and D2 in forming the Chinese

manufacturer's smartphone family in 2013. And boy, it's a slender, feather-light phone with a glossy backing that comes in both black and white. Design-wise, like the leaks we saw, it looks an awful lot like those P1 phones we first saw at CES 2012.

Its notable feature is the highest-speed LTE connection seen so far in a



KEY SPECS**OS:** *Android 4.1 Jelly Bean***CPU:** *1.5GHz Quad-core***MEMORY:** *1GB***STORAGE:** *16GB***DISPLAY:** *4.7-inch, 720p IPS***CAMERAS:** *13MP (rear)***BATTERY:** *2,420mAh*

smartphone, up to 150 Mbps with support for LTE Cat4. We also got to play with Huawei's Emotion UI again, which can draw on the 1GB of RAM housed inside. There's plenty of storage, with 16GB ready to accept your photos and music. The right side houses a volume switch and a physical camera button — these were a bit plasticky, but have a nice matte finish. The other side is where the power button belongs, with both the headphone and micro-USB charging port found there. Huawei's focusing on battery life here as well, with a 2,420mAh cell powering the An-

droid phone and the promise of consuming 20 percent less power, thanks to the handset's display technology.

Getting into screen performance, it reflected a fair bit of ambient light. It's perhaps not the best display we've seen from Huawei — there seems to be a space between the surface of the glass and the display itself.

The hardware feels light, but feels like we were often unable to keep hold of it. If you're in Europe, you can pick this up in Q2 for €399 (\$526). — *Mat Smith*





ASUS FONEPAD

We already knew ASUS was prepping a product called the FonePad, a 7-inch tablet with built-in phone func-

tionality (yes, just like the new Samsung Galaxy Note 8.0). First off, the speculation about its specs was all true: this does indeed have an Intel processor along with 1GB of RAM, a PowerVR SGX540 GPU, Android 4.1 Jelly Bean and an HSPA+ radio. What's more, the 4,270mAh battery is said to get up to nine hours of runtime, which would put this in the same league as other Atom tablets we've tested recently.

In terms of hardware features, the FonePad has a smooth metal back (available in gray and gold), making it drastically different in appearance from the similarly sized Nexus 7. 'Round back you'll find a panel where all the usual antennae are,

and hidden underneath are both the micro-SIM slot and the microSD reader. That microSD slot, by the way, supports 32GB cards, which should come in handy considering this has just 16GB of built-in storage. Additionally, the tablet has a 1.2-megapixel





front camera, attached to a 7-inch, 1,280 x 800 IPS display. The FonePad will be available in Europe for £179 / €219. ASUS also confirmed a US dollar price of \$249, though we had heard rumblings it wouldn't actually be sold here. It arrives in March, but the specific on-sale date hasn't been revealed yet. — *Dana Wollman*

KEY SPECS

OS: *Android 4.1 Jelly Bean*

CPU: *1.2GHz Atom Z2420*

MEMORY: *1GB*

STORAGE: *16GB / microSD up to 32GB*

DISPLAY: *7-inch, 1,280 x 800 IPS*

CAMERAS: *1.2MP (front-facing)*

BATTERY: *4,270mAh*





GEEKSPHONE PEAK

Never heard of Geekophone before? We can't quite blame you, but it received a fair share of attention at Mobile World Congress. While the company has cranked out an Android handset or two over the past few years, it's now dipping a second hand into the Firefox OS pot. Of the two models unveiled at this week's show, the Peak is the higher-end: it boasts a 4.3-inch qHD display, 8-megapixel rear camera and 2-megapixel front-facing cam, a 1.2GHz dual-core Snapdragon S4 Play chipset (MSM8225), 512MB RAM, 4GB storage with microSD expansion and a 1,800mAh battery.

As you can see, the specs on the Peak aren't anything to email home about, but for a Firefox OS device, it's certainly above-average. The ma-

terials are rather on the plasticky side and don't necessarily exude a large sense of elegance, but we're not going to say that the build quality isn't out of the norm for a device in this price range. We didn't have any problem holding it in our hand, and while we weren't given exact dimensions, it appeared to be roughly 10mm thick. The back of the Peak sports the camera, LED flash and the branding of a Firefox OS developer device. In terms of radio frequencies, the Peak is compatible with HSPA 900/1900/2100GHz and quad-band GSM / EDGE. It's expected to arrive in Geeksphone's retail store in the coming weeks and the estimated price will be around 200 euros. — Brad Molen



KEY SPECS

OS:	Firefox
CPU:	1.2GHz Snapdragon S4 (MSM8225)
MEMORY:	512MB
STORAGE:	4GB
DISPLAY:	4.3-inch qHD, IPS Multitouch
CAMERAS:	8MP (rear) / 2MP (front-facing)
BATTERY:	1,800mAh





Tap on product
name for Dana
Wollman's Hands-On
impressions

NVIDIA TEGRA 4

When NVIDIA unveiled Tegra 4 back at CES, we scrambled to get hands-on with a reference device. And though our initial performance impressions were positive — it runs 1080p video and games smoothly — there was only so much we could say to



BENCHMARK	TEGRA 4 REFERENCE TABLET	SONY XPERIA TABLET S (TEGRA 3)	ASUS TRANSFORMER PAD INFINITY (TEGRA 3)
QUADRANT (V2)	16,436	4,349	4,685
ANTUTU	36,305	11,301	12,027
SUNSPIDER 0.9.1 (MS)	499	1,608	2,012
CF-BENCH	41,325	12,625	7,874

SUNSPIDER: LOWER SCORES ARE BETTER.

illustrate how fast the performance was. What we really needed were benchmarks, some quantitative data to help show the difference between Tegra 4 devices and whatever's currently on the market.

As you can see, those numbers are pretty impressive, but before we go any further, we feel compelled to offer a little disclaimer. Ideally, we would have had some of our older Tegra 3 review units with us in Spain. Unfortunately, we didn't have them on hand, so we couldn't re-run the benchmarks on those devices with the latest software installed. That would have made for the best comparison, and we plan to do just that when we eventually start reviewing some Tegra 4 products.

Still. C'mon. Just look at those benchmark scores. Even if we were to repeat all of our benchmark tests on those older tablets, we're pretty sure a software upgrade would not be enough to help these older tablets match Tegra 4, or even come close. Quadrant scores

in the 16,000s? CF-Bench results in the 40,000 range? All unheard of. Particularly stunning was that SunSpider result, which should give you a strong idea of what you can expect in terms of web-browsing performance. In short, the tablet chewed through all that code in just 499ms. To give you some perspective, the iPad 4 scores an average of 865ms in the test.

In addition to letting us benchmark our hearts out, NVIDIA showed us a demo of that same reference tablet hooked up to the same sort of power meter OEMs use to measure power consumption. We had a 1080p video running, with the power rating hovering around 950 milliwatts, compared to 1.2 watts on some other 1080p devices. The result, says Matt Wuebbeling, director of Tegra product marketing, is an extra two hours of battery life compared to the competition. Of course, we can't take his word for it — we'll just have to wait until we get our first Tegra 4 phone in to review. — *Dana Wollman*





WCDMA, LTE and DC-HSPA+, along with all the usual radios: WiFi, Bluetooth 4.0, NFC, A-GPS and even GLONASS. Around back, ASUS has added a 13-megapixel autofocus-camera with an LED flash, five-element, f/2.0 lens and burst shooting at eight fps. Meanwhile, the 2,400mAh battery promises up to 19 hours of 3G talk time, and up to 40 with the dock attached.

ASUS PADFONE INFINITY

You may have heard a new PadFone was on the way — it's not like ASUS has been dropping obvious hints or anything. Like other PadFones, the Infinity is a handset that slips into a tablet-like dock, allowing you to make use of a bigger screen. This time, though, it ships with Android 4.2, and the display has grown from 4.7 inches to five. The resolution is now 1080p which comes out to 441 ppi. Additionally, the tablet's 10.1-inch screen has a resolution of 1,920 x 1,200, up from 1,280 x 800 in the last-gen model. It's plenty bright, too, at 400 nits, but that's a slight step down from the last-gen model, which lit up to 500 nits.

What's more, the phone's gotten an upgrade on the inside: it now packs a quad-core, 1.7GHz Snapdragon 600 chip with an Adreno 320 GPU, some of the freshest components Qualcomm has to offer at the moment. As far as connectivity, you're looking at EDGE, GPRS, GSM,

Like every other PadFone that's been released, this won't be available in the US, but the phone-and-dock combo will cost £799 / €999 when it goes on sale in Europe this April. The phone is also headed to Asia, though we don't have any more details. You'll also have your choice of colors, we hear: gray, gold and hot pink, if that's what you're into. — Dana Wollman



KEY SPECS

OS: Android 4.2 Jelly Bean

CPU: 1.7GHz Quad-core Snapdragon 600

MEMORY: 2GB

STORAGE: 32GB, 64GB

DISPLAY: 1,920 x 1,200, 1080p, 441 ppi

CAMERAS: 13MP (rear) / 2MP (front-facing)

BATTERY: 2,400mAh





Tap on product name for Joseph Volpe's Hands-On impressions

ZTE GRAND MEMO

ZTE caught us by surprise, outing a Snapdragon 800 variant of the Grand Memo at its MWC 2013 presser. The device, which still features the same 5.7-inch (720p) display, 13-megapixel rear camera and 3,200mAh battery, is nearly indistinguishable from the other variants we've seen. But for this go-round, ZTE's added in Dolby Digital Plus Surround for a superior audio experience and an extra GB of RAM.

KEY SPECS

OS: Android 4.1.2 Jelly Bean

CPU: Snapdragon 800 Processor with Quad-core Krait CPUs

MEMORY: 2GB

STORAGE: 16GB

DISPLAY: 5.7-inch, 1,280 x 720 TFT

CAMERAS: 13MP (rear) / 1MP (front-facing)

BATTERY: 3,200mAh

Its external chassis may have remained the same — plasticky and lightweight — but the difference in this 8.9mm-thick Memo's real-world performance is immediately noticeable. OS actions on the skinned Jelly Bean UI don't just zip, they now fly — truly, this device is deserving of the long-deceased "beast" moniker. Although international trade show WiFi connections are typically dreadful, we did manage to successfully run the SunSpider benchmark to get a quick taste of its rendering performance. The result? The Grand Memo notched a score of 1,186.7ms — an unimpressive result when contrasted with the Tegra 4's 499ms (as derived from a reference tablet).

As for ZTE's MyFavorite UX layered atop Android 4.1.2, well, we're pleased to say it yields some neat animations. The entire home screen, including widgets, revolves with a smooth 3D effect that just imbues the handset with a special "feel." It's a shame then that the Memo's encased in a less-than-premium shell, as it creates a disconnect between the smoking internals and humdrum exterior. But with a newly announced commitment to building its brand, this particular Memo is proof positive that ZTE's serious about raising its profile and consumer perception. You won't be seeing this hit US shores anytime soon — it's a China- and Europe-only affair for now. — Joseph Volpe



NOKIA LUMIA 720

It's what the 920 should've been — the Lumia 720, that is. From the moment Nokia laid the slim, 4.3-inch device in our hands, it was apparent the company has a different user in its sights: the hyper-social and style-obsessed. With a profile of 9mm, the Lumia 720 is now the thinnest Windows Phone 8 device in the Finnish company's lineup. So, you can forget about dazzling specs — the 720's demo supposedly isn't concerned with bleeding-edge tech. In fact, some of what you'll find in the 720 can also be found in its lowest-end cousin, the 520.

At its base, the 720 is all about color(s) and camera, just not in the way the Lumia 920 was.



For starters, the slight-looking 720 will come in five different shades and includes a 1.3-mega-pixel front facer with wide-angle lens and a new 6.7-megapixel rear camera module with f/1.9 lens (developed with Carl Zeiss labs) for low-light performance. As we've seen with other stylishly built smartphones in the past, a focus on design doesn't always necessarily translate to a great, ergonomic fit. That's not so with the 720. Hold it in hand and you'll immediately notice its weight is evenly distributed, so it doesn't register as heavy, despite its 2,000mAh battery. And because its edges are softly curved, your fingers will wrap comfortably around and rest on the screen, which melds gently into the polycarbonate body. In short, you'll be hard-pressed to find any hard edges. Unfortunately, it appears Nokia's restricting the 720's availability to very select regions, with a concentration on the Asian market. When it does make its initial market debut in Q2 2013, expect to see it retail for €249 (about \$330). — Joseph Volpe

KEY SPECS

OS:	Windows Phone 8
CPU:	1GHz Dual-core Snapdragon
MEMORY:	512MB
STORAGE:	8GB / microSD up to 64GB
DISPLAY:	4.3-inch, WVGA LCD ClearBlack
CAMERAS:	6.7MP (rear) / 1.3MP (front-facing)
BATTERY:	2,000mAh





Tap on product
name for Terrence
O'Brien's Hands-On
impressions



FUJITSU ARROWS X

We'll get this out of the way upfront: you will probably never be able to buy this phone. The Arrows X F-02E will, at least for the immediate future, be a NTT DoCoMo-only device. But, now that you know not to get your hopes up, let's get a feel for just what you'll be missing. Fujitsu's waterproof flagship is powered by a 1.7GHz quad-core Tegra 3 and 2GB of RAM. And that horsepower is put to good use pushing pixels on a brilliant 5-inch,

1080p display. We'd stop short of saying it's the best phone screen we've seen, but it's definitely in the running. Colors are bright, text is crisp and viewing angles need to be seen to be believed. Thankfully, all that lovely screen real estate isn't being eaten up by some insanely outdated version of Android. On board you'll find Android 4.1.2 — not the latest and greatest, but at least it's Jelly Bean.

The device itself has a slightly aggressive and angular design that reminds us somewhat of the OG Droid. Unlike that device though, there are no physical buttons up front — be they capacitive or mechanical. Instead Fu-



**KEY SPECS****OS:** *Android 4.1.2 Jelly Bean***CPU:** *1.7GHz Quad-core Tegra 3***MEMORY:** *2GB***STORAGE:** *n/a***DISPLAY:** *5-inch, 1,920x1,200, 1080p***CAMERAS:** *16.3MP (rear)***BATTERY:** *2,420mAh*

jitsu uses the on-screen keys, just as God Google intended. The build is a bit plasticky, but the rear plate does have a nice soft-touch finish that keeps it from feeling exceedingly cheap. Also giving it a premium feel is the 2,420mAh battery that, in addition to providing some decent talk time lends a satisfying heft to the handset. Also on the rear plate, you'll find a fingerprint scanner for a touch more security than a simple PIN provides. Above that is the impressively spec'd 16.3-megapixel primary camera. — *Terrence O'Brien*



LG OPTIMUS L5II & L7II

We've heard (and seen) a fair bit about LG's L-series sequels, but nothing beats seeing them in the flesh, right? Both the 4.3-inch L7II and the smaller (4-inch) L5II were on show at LG's media event, and while we might have been more easily distracted by more powerful relatives, it looks like LG's middleweight smartphone series has its fans. As expected from the company's Style line, there's been some design changes, alongside a power increase to dual-core processors on the bigger L7II — the L5II arrives with a single-core 1GHz processor.

Outside of cold, hard specifications, both the L7II and the L5II house a new LED light bar around the physical home button. There's a rainbow effect, plus a green glow for notifications and red when your battery hasn't got much left. It reminds us of the contextual light bar found on the Xperia U. LG has added laser-cut contours to the edges, making the phones feel more premium, more considered than last year's series. Camera-wise, the L7II augments last year's 5-megapixel sensor to eight megapixels, paired with a front-facing VGA camera. The L5II takes 5-megapixel stills but it's, by and large, the same design as the L7II with a lesser spec sheet. — Mat Smith



Tap on product name for Mat Smith's Hands-On impressions



L5II KEY SPECS

OS:	Android 4.1 Jelly Bean
CPU:	1GHz Single-core
MEMORY:	n/a
STORAGE:	n/a
DISPLAY:	4-inch
CAMERAS:	5MP (rear)
BATTERY:	1,700mAh

L7II KEY SPECS

OS:	Android 4.1 Jelly Bean
CPU:	Dual-core
MEMORY:	768MB
STORAGE:	4GB
DISPLAY:	4.3-inch, WVGA 800 x 480 IPS
CAMERAS:	8MP (rear) / VGA (front-facing)
BATTERY:	n/a





Tap on product name for Sean Cooper's Hands-On impressions

ALCATEL IDOL X

Alcatel converted its One Touch Idol line from a duo to a trio the launch of yet another set at Mobile World Congress: the Idol X. While not quite as slim as its 6.45mm-thin Idol Ultra sibling, at 7mm thick with a tiny 2.4mm

bezel, it definitely is about as small as a 5-inch set can get. The Idol X's giant 1080p IPS display is fantastic to look at and Jelly Bean is snappy, driven by a quad-core MediaTek MT6589 1.2GHz CPU. Like many of Alcatel's other sets, the range of configurations varies by market as we'll see both 13- and 8-megapixel variants — both with

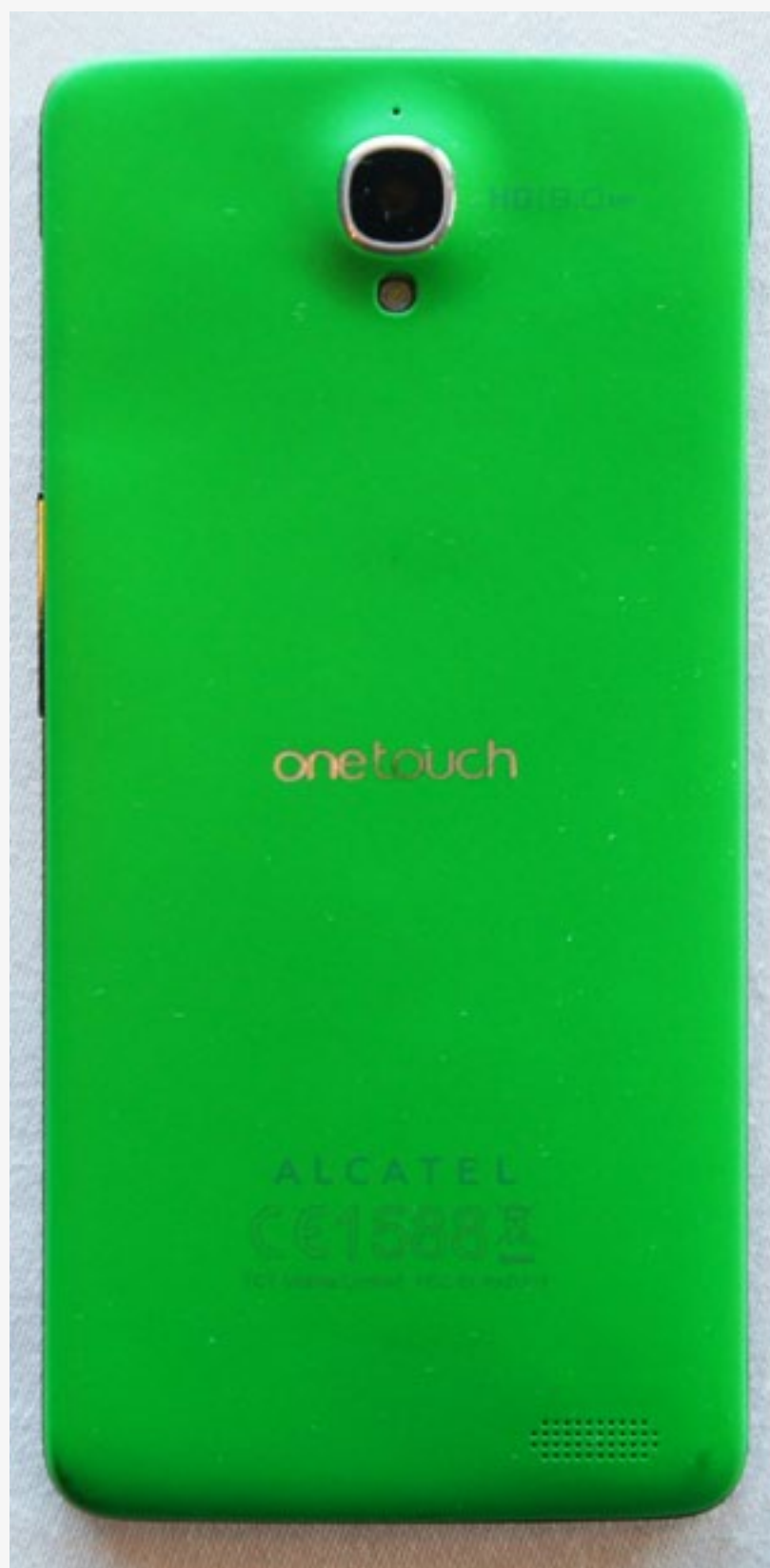


1080p front-facing cameras — and dual- or single-SIM options, with the single variety getting a bonus microSD slot. While the Idol X is not equipped with LTE, it does have 42 Mbps HSPA+ connectivity, quad-band GSM and offers dual-band UMTS in both 900/2100MHz or 850/2100MHz frequencies.

Alcatel's all about mass market; it isn't chasing the likes of Apple or Samsung, but rather is quite happy to simply make "devices for people." So while 2012 marked its first foray into smartphones, judging by what we've seen so far in 2013 from them, it seems they've nailed affordability while maintaining a surprising amount of quality; a great combination. — Sean Cooper

KEY SPECS

OS:	Android Jelly Bean
CPU:	1.2GHz Quad-core MediaTek MT6589
MEMORY:	2GB
STORAGE:	8GB (1x SIM) / 16GB, 32GB (2x SIM)
DISPLAY:	5-inch, 1080p IPS
CAMERAS:	8MP, 13MP (rear) / 1080p (front-facing)
BATTERY:	n/a



NOKIA LUMIA 520

Did you think the Nokia Lumia 620 was a solid-enough smartphone to shake up emerging markets, thanks to its low cost? Say hello to the Lumia 520, which, at an estimated cost of \$183, will be one of the (if not the) least expensive Windows Phone 8 devices once it comes out later this quarter. It's attracted a commitment from T-Mobile in the US and other carriers around the world, so we're likely going to see a lot more of this little beaut in the future. Naturally, it's time for a face-to-face introduction.

The Lumia brand as a whole is very consistent in its overall design language, so it's not difficult to tell that the 520 fits perfectly in the lineup. It will be offered in five of Nokia's usual colors: cyan,



red, black, yellow and white. While it felt a little cheaper (as one would expect with such a low-end handset), it still seemed to be held together quite solidly. Since the 520 uses a WVGA (800x480) LCD panel, it's not quite as saturated in color as the 720, but its 4-inch size actually helped make the text appear crisper and clearer than its larger-screened companion. The edges of the phone not only slope gently up to meet the screen, they come up ever so slightly above the screen, inter-

rupting the smooth transition our fingers make from the display to their usual home on the sides. Altogether, we're feeling pretty good about a device like the 520; after our excitement with the Lumia 620, we'll be happy to take its less-expensive sibling for a spin as well. — Brad Molen

KEY SPECS

OS: Windows Phone 8

CPU: 1GHz Dual-core Snapdragon

MEMORY: 512MB

STORAGE: 8GB / microSD up to 64GB

DISPLAY: 4-inch, WVGA (800x480) LCD

CAMERAS: 5MP (rear)

BATTERY: 1,430mAh



ENGADGET

PRIMED

Making Sense of the US' New Phone Unlocking Policy

An inside look at the issues surrounding the recent policy on phone unlocking, and how it affects carriers, businesses and the consumer
By Brad Molen

On October 25, 2012, the US librarian of Congress ruled that the act of unlocking your phone was no longer allowed under copyright law. The ruling, which has been severely criticized by consumer advocacy groups and tech enthusiasts across the country, declares that it's a copyright violation if you unlock your phone without the permission of the carrier it's locked to.

Why would such an unthreatening action result in heavy fees and possible jail time? We'll discuss what the ruling means for the future of the mobile industry, how it will impact consumers and if we should worry that our dentist's uncle's third cousin (once removed) is in trouble because he has an unlocked phone.

WHAT IS UNLOCKING?

In short, some mobile operators in the US (primarily GSM networks) choose to include restrictions on each phone they sell that prevent you from being able to put in a SIM card from a different network. For instance, if you put a T-Mobile SIM in a locked AT&T phone, you'll be greeted by a message telling you that your card isn't supported and you won't get any service. (You can dial 911, but that's all.) Unfortunately, this restriction also includes operators around the world, so international travelers would be subject to outrageous roaming fees for calls, texts and data.

Fortunately, you're not completely stuck; most operators have policies that allow you to receive a code to unlock your device under specific conditions. Typical-



ly you need to be a loyal customer in good standing for a certain period of time, and you need to have a valid reason for unlocking it, such as going out of the country or being in the military. Regardless of the flexible policy many of them have, carriers are still the gatekeepers, and it's up to them to decide whether or not you deserve the code to unlock your device.

THE RULING

The Digital Millennium Copyright Act (DMCA), which was passed in 1998, states: "no person shall circumvent a technological measure that effectively controls access to a work protected under this title." However, because Congress recognized that things could quickly change over the passage of time, the governing body added a provision that allows the Library of Congress (of which the Copyright Office is a branch) to provide exemptions to the law once every three years. Once proposals are submitted, hearings are held in DC and a select West Coast city the summer before the ruling. These hearings are the chance for each side of the debate to present evidence that supports their respective arguments. In this case, the question was whether or not the ability to unlock phones falls under fair use.

After the hearings, the register of copyrights (the head of the Copyright Office, a position currently held by Maria Pallante) determines if these proposals should in fact become official, and submits those findings to the librarian of

Congress, who gets the final say. But the final decision isn't permanent; once the three years are over, each exemption expires and needs to go through the same exact process. The register makes a decision as if the evidence is being presented for the very first time.

This is where the phone locking issue comes in. In 2006 and 2010, the register allowed an exemption which gave customers the ability to legally bypass the carrier to get their phones unlocked. In 2012, however, that same exemption was denied. If you purchased a locked handset after January 26th, 2013, the only way to legally remove that lock is if you get permission (and thus, a code) directly from your carrier. If the device was already unlocked when you bought it, you're safe.

In what way are phone locks tied in with copyright law? According to Tyler Ochoa, a professor of law at Santa Clara University and an expert in copyright law, "The work that's protected by copyright in this case is the software that operates the phone. It's protected by a technological measure, namely more software, that prevents you from getting access to the phone's software without the permission of the copyright owner, which is typically the entity selling you the phone."

Essentially, these restrictions are considered part of the firmware or software of the device, and thus are a copyrighted work that cannot be circumvented. Section 1201 of the DMCA states: "No person shall circumvent a technological measure that effectively controls access to a work



protected under this title.” It’s a pretty broad section of law, which is likely why exemptions were granted to this particular issue, but phone locking can technically be applied to fit this rule. In terms of control, operators see subsidy locks as a way to control the investment they’ve made in individual customers, since they provide immediate discounts to the phone in exchange for a two-year commitment. An early termination fee (ETF) is assessed whenever customers breach their contracts, but the CTIA argues the subsidy is often larger than those fees. There’s also the possibility that customers choose not to pay the ETF and take a hit on their credit reports.

But don’t we own the phones that we purchased with our own money? Can’t we do whatever we want with them? Ochoa argues that while we own our phones, we may not own the software that comes loaded on them — which, of course, includes digital locks.

*While we own
our phones, we
may not own the
software that
comes loaded
on them.*

“That’s a technological protection measure, and you’re not allowed to hack around it without the authorization of the copyright owner,” he said. “The copyright owner says you don’t own your phone software, you license it. They say you’re actually leasing software instead of purchasing.”

This argument is primarily based on the ruling for *Vernor v. Autodesk*, which holds that “a software user is a licensee rather than an owner of a copy where the copyright owner (1) Specifies that the user is granted a license; (2) significantly restricts the user’s ability to transfer the software; and (3) imposes notable use restrictions.” In this case, phone users fall under the category of licensee, thereby leaving us at the mercy of the copyright owners. (How jailbreaking falls under the DMCA exemption and phone locks do not is another discussion altogether, but apparently there’s enough legal evidence to allow it.)

Interestingly, Ochoa argues that carriers are not the actual copyright owners of the software that comes on locked devices — the manufacturers are. But what do they get out of the deal?

“The manufacturers probably don’t care much one way or the other, except that carriers are their biggest customers,” he said. “If the carriers don’t want you to unlock it, then manufacturers will go along with that and say, ‘We don’t want you to unlock it either.’ If you buy your phone direct from the manufacturer, they’ll probably be willing to let you unlock it.”



Arguments

Why would the register make such a decision? If the exemption was granted twice in a row, what's lawfully different this time around?

To answer that, we'll first discuss the arguments made at the hearings — both for and against the exemption — and then explore the logic behind the decision.

PROS



Four major companies fought for the exemption to be extended: Consumers Union, Youghiogheny Communications, MetroPCS and the Competitive Carriers Association. You may have heard of MetroPCS, a large prepaid carrier, but what about the other guys? Consumers Union is a nonprofit that publishes *Consumer Reports* magazine; the Competitive Carriers Association used to be known as the Rural Carriers Association and consists of more than 100 carrier members across the country; and Youghiogheny is a communications company based in Texas.

Below are the proponents' official arguments, as stated by the *Federal Register*:

“If enough customers have the ability and propensity to switch service providers in response to a change in price or non-price factors, then mobile wireless service providers will have an incentive to compete vigorously to gain customers and retain their current customers.”



“Owners of mobile phones are also the owners of the copies of the computer programs on those phones and that, as owners, they are entitled to exercise their rights under Section 117, which gives the owner of a copy of a computer program the privilege to make or authorize the making of another copy or adaptation of

that computer program under certain circumstances, such as to permit the program to be used on a particular machine.”

“Ending the exemption will lead to higher device prices for consumers, increased electronic waste, higher costs associated with switching service providers and widespread mobile customer ‘lock-in.’”

“Some devices sold by carriers are permanently locked and because unlocking policies contain restrictions and may not apply to all of a carrier’s devices. Software locks are impediments to a competitive marketplace. Absent the exemption, consumers would be forced to continue to do business with the carrier that sold the device to the consumer in the first instance, or to discard the device.”

The proponents also reviewed some of the findings of the 2006 and 2010 cases. In those exemptions, they argued, the register

declared the practice of software locking a handset was limited to support a business model, rather than to protect access to a

copyrighted work, and was “a business decision that had little to do with the interests protected under copyright law.”



CONS

And in this corner was the CTIA, a trade association that represents all four national carriers, several regional networks and most major handset manufacturers. Because it's such an important issue to a few of its member companies — TracFone, AT&T and T-Mobile appear to be the most interested in the group — it makes perfect sense why the CTIA would get involved.

Here are some of the points they made for declining an exemption (again, as mentioned in the official docs):

“An exemption for unlocking is not necessary because ‘the largest nationwide carriers have liberal, publicly available unlocking policies,’ and because unlocked phones are ‘freely available from third-party providers — many at low prices.’”

“The industry has been plagued by ‘large-scale phone trafficking operations’ that buy large quantities of pre-paid phones, unlock them and resell them in foreign markets where carriers do not subsidize handsets.”

“Owners of wireless devices do not necessarily own the software on those devices.”

“The practice of locking cellphones is an essential part of the wireless industry’s predominant business model.”



FINAL VERDICT

After weighing the evidence that was presented before the register, she came to the following conclusions:

CONCERNING LEGACY DEVICES: *“The record demonstrated that there is significant consumer interest in and demand for using legacy phones on carriers other than the one that originally sold the phone to the consumer. It also supported a finding that owners of legacy phones — especially phones that have not been used on any wireless network for some period of time — may have difficulty obtaining unlocking codes from wireless carriers, in part because an older or expired contract might not require the carrier to cooperate.”*

“The register concluded after a review of the statutory factors that an exemption to the prohibition on circumvention of mobile phone computer programs to permit users to unlock ‘legacy’ phones is both warranted and unlikely to harm the market for such programs. At the same time, in light of carriers’ current unlocking policies and the ready availability of new unlocked phones in

the marketplace, the record did not support an exemption for newly purchased phones. Looking to precedents in copyright law, the register recommended that the class designated by the librarian include a 90-day transitional period to allow unlocking by those who may acquire phones shortly after the new exemption goes into effect.”

“There are ample alternatives to circumvention. That is, the marketplace has evolved such that there is now a wide array of unlocked phone options available to consumers. While it is true that not every wireless device is available unlocked, and wireless carriers’ unlocking policies are not free from all restrictions, the record clearly demonstrates that there is a wide range of alternatives from which consumers may choose in order to obtain an unlocked wireless phone.”

In other words, the ability to circumvent carrier-locked handsets was removed because consumers have a choice to pursue alternative options, and carriers have an unlock policy that’s somewhat flexible. An exemption on legacy handsets, on the other hand, was supported because of “significant consumer interest and

large demand” and because people “may have difficulty obtaining unlocking codes from wireless carriers, in part because an older or expired contract might not require the carrier to cooperate.”

The last statement is a little confusing; the ruling seems to indicate that “legacy phones” are only

devices that were purchased prior to January 26th, yet the wording supports the argument that any device that’s served its two-year commitment should be exempt from the DMCA. Two years from today, will customers have the same right to unlock their phone that current legacy customers do?



HOW WILL THIS AFFECT CONSUMERS?

Regardless of how anyone feels about the librarian's decision, it's still set in stone for at least another three years. During this time, how will we — the loyal consumers — be impacted by this decision? When it comes to regular day-to-day life, it probably won't make a huge difference to most people. Carrier unlocking policies appear to be exactly the same, so international travelers who are in good standing should still be able to receive unlock codes without too much pain involved. You also have the option, as the register concluded, to head to retailers that sell phones that are already unlocked. (Unfortunately, in AT&T's case, you may have to do more hunting around if you're looking for devices that are compatible with its LTE network.)

With the additional restrictions in place, however, it's hard to say without a doubt that carriers will continue to be flexible with their unlock policies, since there's nothing stopping them from becoming more strict. If this occurs, consumers who are denied an unlock code

from their carrier of choice will only have two options: either buy an unlocked phone or swallow an expensive ETF and change carriers, though the latter option will still involve purchasing a new device anyway. (Both AT&T and T-Mobile representatives insist that the policy hasn't changed, but it's difficult to know if this will be the case in the long-term future.)

Additionally, consumers are impacted once they decide to sell their locked device after the contract terms expire. Many proponents argue that it's much harder to sell locked devices because of the severe limitations placed upon them, and if they are sold, the cost will be much lower. Of course, if you're at the point where you're ready to sell your device, it's most likely because you're out of contract with your preferred network; the good news is, once your contract is over (or if you paid full retail price and opted out of a contract), your carrier should be much more amenable to providing an unlock code with no questions asked. The reality of the matter, however, is that the ball is still in its court. You'll have to approach your carrier, and there's nothing stopping it from declining your request.

Despite the hit that this restriction takes to our perception of freedom and phone ownership, there's one piece of silver lining for the consumer: it's an opportunity for consumers to be educated on the benefits of buying an unlocked device, and to realize there really are more choices available in the US than phones that are sitting on the shelves of carrier retail stores.

Nothing is stopping mobile operators from declining your unlock request. The ball is in their court.



HOW WILL THIS AFFECT BUSINESSES?

It all depends on which side of business you fall on. Companies that rely solely on providing unlock codes to customers are likely going to have a difficult time surviving — without the carriers noticing, at least. On the flipside, however, businesses that focus primarily on selling phones that have never been locked or touched by the carriers are not as likely to be adversely affected.

In fact, the opposite may very well happen. Ryan Negri, founder and CEO of Negri Electronics, explained to us that sales have actually gone up since the ruling took effect.

“We’re doing very well on the OEM devices that are never carrier-locked ... Even though [unlocked phones] cost more at retail, we’re able to sell it to them as is, with a US charger, without bloatware; and even though it’s more expensive, people are still saving money on it because they’re taking it to pre-paid,” Negri said.

According to Negri, there’s more to the big picture than increased sales. He’s hopeful that this ruling will weed out many of the unethical practices that have been taking place in recent years.

“A lot of companies have runners, or people that buy devices from different stores or from people on Craigslist, verify the merchandise and then sell it to [that company],” Negri said. “Some of them aren’t ethical. They’ll go into AT&T, say they have a business account, buy 10 lines and then sell those \$199 phones

“It’s going to be a good change for the industry, but it’ll hurt manufacturers and carriers.”

for \$450. They don’t tell people they got the phones this way. By disallowing these runners to just walk into a store and buy phones [this way], it cleans up the industry. You’ll only have ethical people involved. It’s a huge issue in our industry — ethics, period. It’s so hard to find honest and trustworthy people to buy and sell to. I believe that having this law will minimize the amount of people getting involved, and will clean it up. It’s going to be a good change for the industry, but it’ll hurt manufacturers and carriers.”

That doesn’t mean the ruling makes everything perfect for third-party phone retailers. Negri commented that this decision may cause more people to question companies that sell unlocked phones; while many existing businesses have established a relationship of trust with a large clientele, some industry newcomers will be viewed as shady without being given the opportunity to establish themselves.



HOW WILL THIS AFFECT MOBILE OPERATORS?

While Negri believes a cleaner industry will hurt manufacturers and carriers, most of those companies likely have a much brighter outlook on what will happen in the next three years. In fact, as we mentioned earlier, phone trafficking was one of the central arguments in the CTIA's case against an exemption.

According to Michael Altschul, SVP and legal counsel for the CTIA, prepaid companies like TracFone were the hardest hit by traffickers.

"There were organized groups purchasing TracFone devices and then unlocking them and reselling them in Mexico and other countries that use the same frequencies," Altschul said. "It was an arbitrage scheme. You'd buy it in the US and there wasn't a contract, but there was a software lock to keep the device locked to the TracFone prepaid service. The phones would get unlocked and sold outside the US, closer to the retail price than they were being sold at in the US. TracFone was very concerned that this kind of widespread practice was a real threat to their abil-

ity to provide discounted handsets and grow their business."

This is all part of a battle that TracFone has fought since 2006, filing lawsuits against hundreds of accused phone traffickers in the last seven years. Up until this year, however, the company's only weapon was in the area of trademark law. Now that phone unlocking is no longer exempt from copyright law, TracFone has another tool to fight with.

Does this really hurt business models? Were carriers losing money under this exemption? While it's quite likely that TracFone was indeed experiencing some sort of setback due to trafficking, it's hard not to wonder exactly what kind of effect the exemption had on postpaid networks like AT&T and T-Mobile, if any. AT&T's business model has changed only slightly over the last few years, and the concept of contracts and phone subsidies has remained unaffected. A quick look at the company's quarterly results indicates that if any money has been lost because of the exemption, it likely isn't much, and shareholders don't seem to be very upset about it.

T-Mobile, on the other hand, has recently focused its efforts on rebranding

TracFone has fought a seven-year battle against phone traffickers, and copyright protection is one more tool it can add to the toolbox.



to an “uncarrier” that warmly welcomes unlocked handsets — even iPhones — onto its network, and offers lower monthly prices for consumers that choose to go this route. If anything, an exemption would appear to encourage this business model, not hinder it.

Of course, not every mobile operator has the same attitude toward the ruling. Nearly all of the proponents supporting an exemption were carriers, which means there’s a large difference in opinion between smaller regional networks and big guns like AT&T and TracFone.

ARE WE GOING TO BE SUED?

Under the DMCA, penalties for unlocking devices can be ridiculous — the Electronic Frontier Foundation (EFF), an advocacy group focused on defending digital rights for the consumer, says that it’s “up to \$2,500 per unlocked phone in a civil suit and \$500,000 or five years in prison in a criminal case where the unlocking is done for ‘commercial advantage.’” Does this mean you need to hide in the basement and wrap your illegally unlocked phone in tinfoil? For Joe Plumber, probably not.

“I’m not aware that carriers have any appetite for going after individuals,” Altschul told us.

Businesses, on the other hand, may feel a little more pressure from carriers to stop their copyright-infringing practices, but only if their activities appear carriers’ radars. According to Ochoa, “What’s likely to happen is that if the phone carri-

ers find evidence that someone is offering software that unlocks the phone on the internet, they’ll send a notice to try to get that software removed. If it looks like a software provider is a repeat player or is making a lot of money, the phone carriers will likely try to sue him.”

WHAT CAN WE DO ABOUT IT?

If you’re strictly opposed to the ruling, then you’re in for a bout of depression. As we mentioned earlier, the next decision on exemptions will come in the fall of 2015; proposals and comments will be accepted by the Copyright Office in the fall of 2014. If you want to see a change, the best course of action is to make sure there’s enough interest in the issue and motivate enough groups and individuals with influence to get involved in the process.

There is one possible way to get someone’s attention in Washington: a petition to the White House. Immediately after the ruling went into effect, Sina Khanifar, co-founder at OpenSignal.com, drafted a petition stating “we ask that the White House ask the librarian of Congress to rescind this decision, and failing that, champion a bill that makes unlocking permanently legal.” Having already reached the 100,000-signature threshold, it now requires a response from the White House, but there is absolutely no guarantee that anything can or will be done to reverse the decision. (Don’t forget, the petition for the US government to build a Death Star got enough signatures, but the White House wasn’t favorable to the idea.)

Ochoa explained that even with a



The best way to combat the ruling is to speak with your wallet and show your carrier that you're not willing to purchase a restricted phone.

petition in place, the three-year statute is a legislatively mandated process.

"If you want to try getting Congress to pass a law, great, but Congress can't even agree on much of anything these days," he said. "Frankly, cellphone carriers have more lobbying power than you do. Unless you have a lot of congressional staffers that want to unlock their phones, that's not likely to happen."

Even if Congress decides to take action, a potential bill could either be quickly shot down or delayed for an indeterminate amount of time. At least this type of petition serves as a voice of the people, which made itself heard this year and will be available again when the next exemptions come around in 2015.

In another unlikely scenario, the EFF claims that "if lawsuits happen, the courts should recognize that the DMCA is being misused, and refuse to apply it to anti-competitive software locks." But

it's not quite such a cut-and-dry notion. For a more specific answer, we turn once again to Professor Ochoa to explain:

If someone was sued for unlocking a phone, they would not have an exemption from the DMCA. But that doesn't mean they've necessarily violated the DMCA; it just means they're not exempt from the DMCA. A court would have to decide whether the DMCA was in fact violated. Jurisdiction over copyright matters is exclusively federal, so any federal court would have jurisdiction to interpret the DMCA and decide whether the DMCA was, in fact, violated. The copyright owner who claims the DMCA was violated would choose which of the federal district courts in which to file suit ... the decision of that federal district court would then be subject to appeal in the US Court of Appeals for the circuit in which the district court is located.




Courts can interpret the DMCA on a case-by-case basis, but this doesn't actually overrule decisions made by the librarian of Congress. The only entity that has that power is the US Court of Appeals in Washington. And even then, the decision to adopt (or not adopt) exemptions comes only if that decision was "arbitrary and capricious" — in other words, if the court had reason to believe such a decision was made without evidence to support it.

The lack of legal options may be a disappointment, but you still have other choices to consider. For instance, if you're a Verizon customer, several phones are capable of global roaming and come SIM-unlocked, which means you can stick any GSM SIM into the handset. And as we mentioned earlier, T-Mobile offers a lenient policy, often encouraging customers to bring their own unlocked phones (including the iPhone) onto its network and pay a lower monthly bill.

Finally, you can speak with your wallet; show the operator that you're not willing to purchase a restricted phone, and instead simply purchase an unlocked handset through an independent retailer. There are also plenty of prepaid and MVNO options (such as Straight Talk) that are readily available and oftentimes for a lower price than what you'd find on direct carriers.

Doom, gloom and gnashing of teeth aside, most people probably won't even realize there's been any change

at all. You can still purchase unlocked phones through an independent retailer and there's always the option of going through your carrier to get an unlock code (hence the register's decision), but let's face it: the ruling is more of a primer on the sad state of the mobile industry in the United States. While our neighbors to the north are working on legislation that would prevent mobile operators from locking their devices, we're seemingly heading in the opposite direction. Instead of asking our nation's largest carriers to become more open and transparent to consumers, we're encouraging them to be more closed and restrictive.

It's slightly ironic that shackles have been added to our carrier-locked phones because of the progress our industry has made in offering unlocked devices en masse. Sure, the ruling comes with a few benefits, but at what cost? It's difficult to understand how a lift on this exemption will enable healthy competition among carriers, let alone what kind of impact it has on their business models, but we'll just have to wait it out to see. After all, our mobile landscape may look drastically different in three years — and we can only hope it's for the better. 

Brad is a mobile editor at Engadget, an outdoorsy guy, and a lover of eccentric New Wave and electro. Singer and beatboxer.



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LULLABY FACTORY



PHOTOGRAPH COURTESY OF STUDIO WEAVE



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VISUALIZED

LULLABY FACTORY

>> You may wonder if Willy Wonka's architects had a powwow with the set designer for *Brazil*, but in reality this is the work of Studio Weave, an adventurous architecture firm with a penchant for storytelling. This particular tale is for the patients at London's Great Ormond Street Hospital for Children, whose windows look out at the bland 1930s Southwood building fated for demolition in 15 years' time. Studio Weave has transformed that building into the fictitious Lullaby Factory, replete with fanciful horns, listening tubes and a special radio channel for purveying audio to enrich their hospital stays, and imaginations.

PHOTOGRAPH COURTESY OF STUDIO WEAVE



BEN HECK



THE MODDING GURU AND HOST OF *THE BEN HECK SHOW* discusses the paradigm shift of personal assistants and how *E.T.* was saved by a Speak & Spell

What gadget do you depend on most?
Does a computer count? Not a very interesting answer, but it is the key to everything. I'm a die-hard desktop kind of guy.

Which do you look back upon most fondly?
My Atari 800 of course. I still have it. I should hook up a crappy

1980's station for it one of these days, complete with an old CRT and rabbit ears.

Which company does the most to push the industry?

These days, clearly Apple. By virtue of everyone copying them, they must be pushing things the most. Although, I do feel Microsoft doesn't get nearly enough credit in the grand scheme of things. I mean Windows 95 was a watershed moment in computing; even a Linux person would have to admit that.



“I would think — or hope — the next paradigm shift in computing would be machines that act like personal assistants. Like Siri meets Kinect voice commands.”

What is your operating system of choice?

I run Windows 7, 64-bit on all my stuff.

What are your favorite gadget names?

Gosh, I’ve never really thought about that.

What are your least favorite?

I still think Wii is a terrible name, especially with a U tacked on the end. Also, an Android is a robot with human characteristics, not a phone.

Which app do you depend on most?

You’d be shocked how few apps I have on my smartphone. Honestly, I probably use text messaging the most, since it’s a direct portal to my local contacts.

What traits do you most deplore in a smartphone?

These days, size and durability.

Phones are getting pants-bustingly big, and you still have to treat them like a fragile piece of glass. The bigger they get, the more weight they carry in a drop, the more surface area to break.

Which do you most admire?

I really like the features offered with Ice Cream Sandwich. When you take a photo, there’s a static icon of the share link you use the most (right now for me it’s email) and an easy drop-down menu for more. Tabbed browsing on Chrome ICS is really nice too.

What is your idea of the perfect device?

I really think we’re getting hung up on touch / gesture and letting other stuff fall to the wayside. I would think — or hope — the next paradigm shift in computing would be machines that act like personal assistants. Like Siri meets Kinect voice commands.

With voice recognition and Google website data, why *can’t* I tell my computer, “Locate and install the latest version of ReplicatorG,” and it does it in the background while I get other things done?

One might say, “Well, that’ll be easier when desktop OSes are all app-ified,” but I’m sure I speak for a lot of desktop users when I say I don’t want that in my OS.



What is your earliest gadget memory?

The Speak & Spell was very impressive as a kid; I mean it talked *and* helped E.T. get home! I am also pretty sure the first computer I ever used was a VIC-20 in elementary school.

What technological advancement do you most admire?

The internet is pretty awesome. I know that sounds vague, but I remember a world without it, and it was a very different place. Although, people were more social back then.

Which do you most despise?

Maybe smartphones? It turns everyone anti-social. People have their faces glued to them at all times and why the heck does a 10-year-old need one?

What fault are you most tolerant of in a gadget?

Lack of polish / features. I'll see a device, whatever it is, and think, "Well, it would be nice if it had such and such, but for that price I shouldn't complain."

Which are you most intolerant of?

Slow speed. Don't waste my time, gadget!

When has your smartphone been of the most help?

They are always very useful when traveling, since it's your only portal of communication. Maps, email, schedules ... What's that app that keeps track of the trains in the Bay Area? That's useful when I visit.

If you could change one thing about your phone what would it be?

A real keyboard. Goes back to wasting time, something onscreen keyboards and stupid autocorrect are guilty of.

Unfortunately, with phones it's "Slim shape, real keyboard and good phone — pick two."

What does being connected mean to you?


Having my phone / computer on and "connecting" with people on social networks, forums, groups and communities like element14.

When are you least likely to reply to an email?

Two major red flags for me:

- Really long emails.
- No capitalization, *all upper or lowercase*, bad spelling.

When did you last disconnect?

I don't even remember! Last summer, a bunch of friends and I went on a fishing trip, yet still we used an iPad over AT&T to watch the real-time Mars landing. 



The week that was in 140 characters or less

Closet Pressers, MWC Timewarp and Exhuming webOS

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ESC

REHASHED

@greengart

ZTE's CES press conference was held in a closet with a magician as emcee. MWC is in a huge room but emcee doesn't speak English. Baby steps.

@Tan_Tan06

Pandora is putting a 40 hour limit per month on how much music you can listen to. We are all screwed.

@iannort

So HP buy kickass webOS, teases good products, mothballs it, releases budget bland Slate 7 using competing OS, then sells#webOS. #crazy

@saschasegan

Just got invited to visit someone's booth at "MWC 2103." Nooooooooooooooooo

@viticci

Chromebook Pixel: for high-res ads.

THE STRIP

BY SAM HENDERSON



DISTRO
03.01.13

ESC

TIME
MACHINES

WHAT IS THIS? 
TOUCH TO FIND OUT



PHOTOGRAPH BY MARK RICHARDS. COURTESY OF THE COMPUTER HISTORY MUSEUM



GRiDPAD

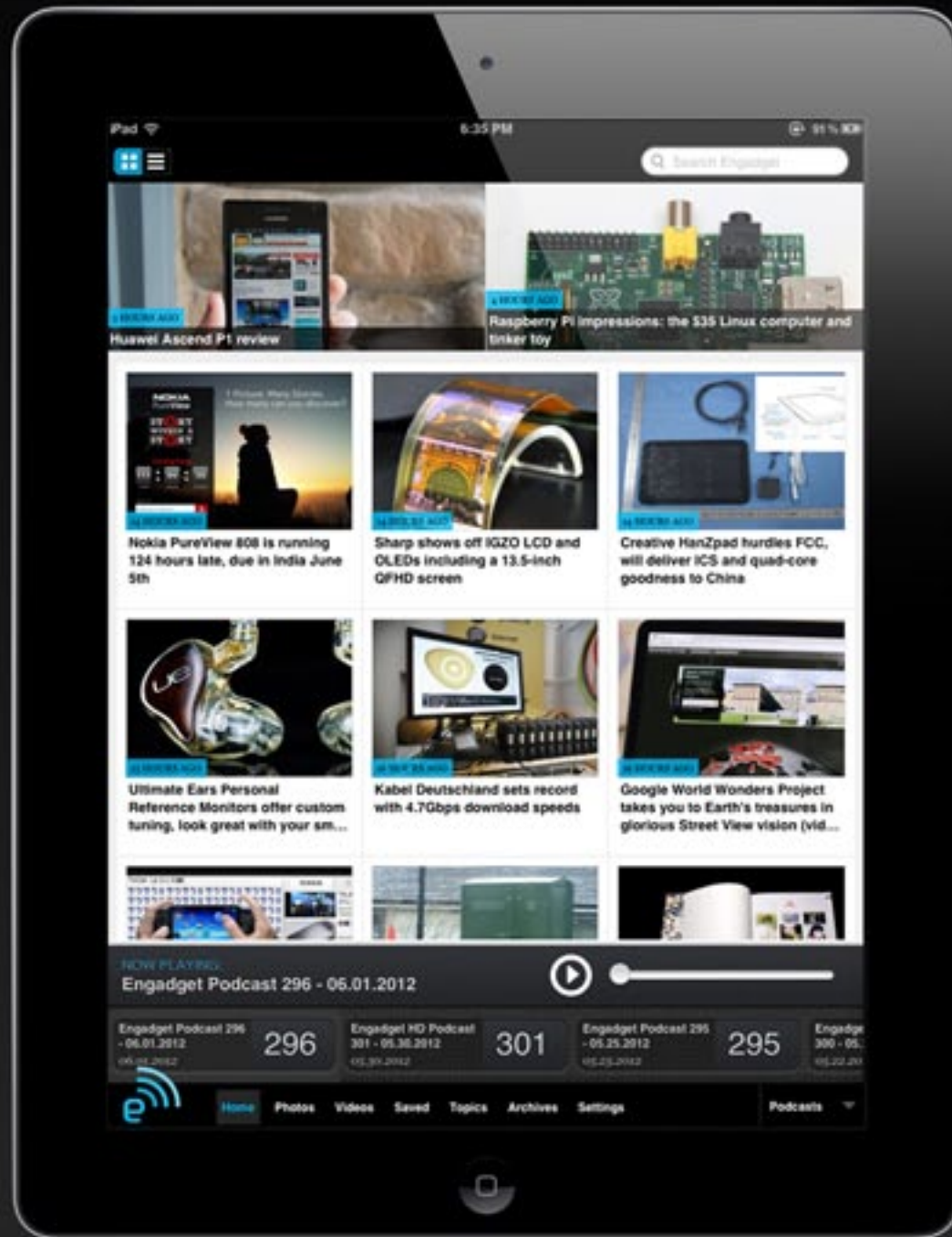


Before the Grid name got wrapped up in a whole lot of JooJoo, it was used by a company called GRiD Systems Corp. With the help of Samsung's manufacturing chops they released the GRiDPad in 1989. It was one of the first tablet systems out on the consumer market and featured handwriting-recognition software by Jeff Hawkins, who also played a large role in the future development of the Palm Pilot. The tablet was made for some serious use, sporting an impact-resistant case, a rechargeable and removable battery pack, and a 10-inch, 640 x 400 LCD display. The system had a respectable bit of storage for the time with 20MB of disk space, 1MB of RAM and it ran MS-DOS 3.3, which made it ideal for use managing inventory at factories and even in the military.



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